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An Address
ON
SOME RARE AND OBSCURE PULMONARY AND PLEURAL CONDITIONS.

Being the Presidential Address delivered to the Ulster Medical Society on Nov. 3rd, 1921,

BY ROBERT HALL, L.R.C.P. & S. EDIN.,

SENIOR PHYSICIAN TO BELFAST INFIRMARY AND TO BELFAST MUNICIPAL SANATORIUM; CONSULTING PHYSICIAN, ULSTER VOLUNTEER FORCE HOSPITAL; CLINICAL LECTURER IN MEDICINE IN BELFAST UNIVERSITY.

THE question of what form my address should take presented difficulties to me, but I decided that a few observations concerning rare and obscure lung and pleural conditions which are diagnosed with difficulty might prove of interest.

CONDITIONS SIMULATING PNEUMOTHORAX.

The first two conditions I shall mention are those which simulate pneumothorax and, so far as my experience goes, are only to be met with in advanced phthisis.

I.—*Cavity Simulating Pneumothorax.*

The first case I have to describe is that of a female patient who, on admission to the infirmary, was suffering from moderately advanced phthisis of the upper lobe of the left lung. Several cavities were present; these, by destruction of the tissues, ultimately formed one large cavity, practically involving the whole of the lobe, and accompanied by amphoric breathing and all the other usual physical signs. At this stage, however, the physical signs became misleading: the flattening disappeared from the side, which became immobile. The percussion note was resonant except at the apex posteriorly and the base posteriorly, where it was dull. There was loss of vocal fremitus and the heart was slightly displaced, but the palpitation which frequently accompanies left-sided cavitation, which had been present, had then ceased. On auscultation there was a total absence of breath sounds and of adventitious sounds. Vocal resonance had disappeared and the "bruit d'airan" was easily and clearly elicited. There was no succussion splash usually found in a pneumothorax of a few weeks' duration. As many, though not all, of the signs pointed to pneumothorax a post-mortem examination was awaited with interest; this I was able to obtain, and the findings were as follows: (1) The pleura was everywhere adherent. (2) The lung tissue of the left upper lobe had completely disappeared, except for a small consolidated piece at the apex posteriorly, cut off from air, but not from vascular supply. The lower lobe was compressed into a solid mass, which was not aerated.

The simulation of pneumothorax was due to the pleura being everywhere adherent, the upper lobe being excavated to the pleura, a valvular action of a damaged bronchus permitted air to enter, but not to leave the cavity. This cavity ultimately became distended, exerting a positive pressure on the lower lobe and destroying its physical and physiological activity. The side thus became an air-sac which, preventing collapse of the ribs, gave the physical signs of a pneumothorax.

II.—*Ballooning of the Lung.*

This condition may occur in advanced phthisis where there is excavation, may or may not terminate in pneumothorax; I have met with a considerable number of such cases. The attack is moderately rapid, with all the physical signs of a pneumothorax—tension more than pain in the side, anxious expression of countenance, breathlessness, and—if the trouble is on the left side—great acceleration and marked weakness of the pulse, owing to displacement of the heart. On inspection the side is distended and immobile, the percussion note is hyper-resonant; on palpation there is loss of tactile fremitus, and on auscultation a complete loss of breath sounds. The "bruit d'airan" is possibly not quite so clearly heard as in true pneumothorax. These physical signs would justify the diagnosis of pneumothorax, but they may all be transitory and clear up in 24 hours.

One of my cases of this type was most interesting. He first had ballooning of the lung on the right side; it cleared up and in a few weeks appeared on the left side. There also it cleared up, but later the patient developed true pneumothorax on the right side. The trouble is, I think, caused by a semi-detached piece of lung blocking the bronchus, permitting air to enter, but for the time being not allowing any to escape. Nothing was coughed up which might indicate the cause of blockage, nor was I able to get a post-mortem in any case. I have not been able to trace any reference to this condition in the literature; but if some member of this society has come across a similar case I hope he may be persuaded to read, at a later meeting, any clinical notes he may have which bear on this peculiar pulmonary condition.

I have seen many large cavities which during life presented the ordinary physical signs on percussion, and on auscultation yielded cavernous or amphoric breathing, without presenting signs of pneumothorax. I, therefore, hold the conditions described in the above sections must be present before a large cavity can truly simulate pneumothorax.

III.—*Broncho-Pleural Fistula.*

If pneumothorax occurs in a patient suffering from pulmonary tuberculosis (especially if one lung only is involved)—provided, of course, that the patient has recovered from the shock—there is usually effusion of fluid, which later becomes purulent. The question then arises: What line of treatment should be adopted? Should there be "masterly inactivity" by leaving the condition to Nature? Should the aspirating needle be used, or the side opened and drained? If the first line is adopted the patient, after a time, complains of the weight of the fluid, which becomes distressing to a person in a weak condition. On the other hand, should the ruptured part be large and patent the patient's cough may be aggravated by the oozing of fluid—or, it may be, pus—into the bronchi. The second line of treatment—aspiration—relieves both of these conditions, but the fluid will certainly re-form, and will, after a time, require again to be removed. It will then become a series of re-fillings and removings during the patient's life. I tried the third line of treatment—incision and drainage—on several cases years ago. The patients seemed to get on fairly well for a time, and after a few months the discharge became serous fluid alternating with pus. Ultimately, however, the sound lung became tuberculous and the patient sank. I secured post-mortems and found in each case a small opening at the root of the lung the size of a goose-quill, with hard edges, leading from a large bronchus into the pleural cavity. After seeing these post-mortem conditions I gave up drainage, feeling that I had subjected the patients to the annoyance of a drainage-tube, maybe for months, and to the fatigue of being dressed twice daily, without the slightest hope of healing the ruptured part. As it is impossible to tell where the rupture may be situated, and as it is a question of relief, not cure, I consider that this class of patients can be made more comfortable by aspiration than by any other form of treatment: therefore I have, since that time, adopted this course.

IV.—*Sodden Pleura.*

Cases of pleural effusion are very frequently met with; they generally present all the recognised signs, but occasionally one is encountered in which vocal fremitus is still present and a large bronchial breath sound can be heard all over the side. The pleural cavity must be full in these cases; I have found them

more frequently in the male than female sex, but the condition which I am just going to mention was to all intents and purposes an ordinary case of pleural effusion. The patient, a big, strong-looking man of 45 years, who had always enjoyed good health, found that for a number of weeks before admission to hospital he was very short of breath on slight exertion, which caused him to give up his employment as a labourer. He did not give any history of pain in the side. When I examined him in the Infirmary I found his right side was dull to the clavicle, so had him prepared for aspiration. This I did the following morning, taking all the usual precautions, and removed slowly and gradually 120 oz. of clear fluid, still leaving a considerable amount in the pleural cavity. The patient had no discomfort during or after the operation. Next day on examination there was no detectable change, but on the third day after aspiration I thought I got a suspicion of air in the pleura, and on the fourth day a splash was quite distinctly heard. The side filled up again rapidly in two weeks' time and the air disappeared. I aspirated him on four occasions, with similar results each time; but when the side was full for the fifth time he sat up in bed to have his breakfast and dropped back dead. I was able to get a post-mortem, and on opening the thorax we found the heart and left lung quite normal, but at least four quarts of fluid poured out of the right side. The right lung was compressed; there were no adhesions anywhere, and the pleura, parietal and pulmonary, was thickened (not on account of deposit of lymph) and of a spongy nature. We tested the lung in every available way to see if there was a leak anywhere, but could not discover the slightest sign of one. The question arose as to how the air gained access to the pleural cavity. It was not owing to puncture of the compressed lung when the needle was introduced, nor to carelessness in manipulation of the instrument during removal of the fluid; only on the third day was there sufficient air to create the suspicion of a splash, so that there could not have been a free entrance for it to the pleural cavity. Might it have been that the inspiratory pressure of the air was greater than the resisting power of the lung and pleura, permitting the air to diffuse slowly into the pleural sac?

V.—*Interlobar Effusions.*

Interlobar effusions and empyemata are, I am afraid, not sufficiently in our mind's eye. When the temperature keeps running up and down after pneumonia one thinks of pus in the pleural cavity, or it may be of T.B.; but that the condition might be due to a small quantity of pus or of fluid between the lobes of the lungs is very frequently overlooked. In 1914 I had two very interesting and instructive cases of the above type. Amongst a number of pneumonia cases two men continued to have a sharp rise of temperature for almost a month from the commencement of their attack till inflammatory signs had cleared up; they had annoying coughs, not due to throat trouble, with very trifling amounts of expectoration. There was not much sweating, no T.B. were found in the sputum, and the kidneys and other organs were healthy. Not being satisfied with their condition, I decided to put a needle into whatever part of the chest showed the slightest variation from the normal, either in percussion or palpation. In the first case I got 2 oz. of pus between the upper and middle lobe of the right side, and in the second 1½ oz. of pus between the upper and lower lobes of the left side. In each case the puncture was deep and the result satisfactory; the temperature dropped immediately, cough disappeared. Both men had uninterrupted recoveries, and were with their units training for France in a few weeks' time.

VI.—*Loculation of Fluid.*

Loculation of fluid or pus is frequently very puzzling, especially in the region of the pericardium. About 18 months ago I saw a young man in the country who had had a sharp attack of pneumonia accompanied by a friction rub seven weeks previously. Although all inflammatory trouble had passed off he was not improving; he still had an unsatisfactory cough and some temperature at night, with loss of appetite, but his greatest trouble was, as he described it, "a big lump" in his chest, which seemed to be crushing him all the time. The doctor in attendance, suspecting a pleural effusion, needled him on several occasions over the base without any result. On my examination of the patient I found a slightly diminished resonance on percussion over the base, but vocal fremitus was present, the area of deep cardiac dullness was increased outward to the left, with the apex beat well inside the nipple line. On auscultation the heart sounds were clear, but the respiratory murmur was weaker in the pulmo-pericardial area than elsewhere. Taking these signs into consideration, with the fact that this was the region where he complained of having the "lump," I decided to aspirate at this site. I reached the fluid—though not till I had driven the needle home almost to the head—and removed about 9 oz. of clear fluid. The aspiration gave the patient immediate relief, and without any recurrence of the trouble he made an excellent recovery. This was evidently a loculus formed by the pulmonary and pericardial pleura.

These cases illustrate how much constitutional trouble can be caused by a very small quantity of pus or fluid under tension, and show the value of using the aspirating needle, boldly, if necessary, when you have reason to think fluid exists. I have no doubt that by the removal of pus and fluid in these cases serious trouble at a later period was prevented, either as a general empyema or by bursting into a bronchus, setting up a septic inflammation of the lung tissue en route, and, it may be, the formation of an abscess with permanent injury to the lung.

VII.—*Acute Congestion of the Lungs.*

Congestion of the lungs is an everyday expression, which to the layman may mean anything from an ordinary bronchial catarrh to capillary bronchitis, but to the medical fraternity it may indicate the commencement of serious inflammatory trouble in the lungs or be secondary to disease of some other organ. The congestion of the lungs I am about to speak of is in my experience very rare; I have only met with four cases of it. Judging by the cases I saw, it appears to attack those of 45 years and upwards; the last of these patients was 70 years old, and her condition was typical of that of the other three.

This patient, a healthy old lady, had been in her ordinary good health up till the evening previous to my seeing her, when she complained of not feeling well, with a tightness round her chest, as if her clothing was restricting her breathing; at no time did she have any pain. As this continued her family doctor was sent for; he found the temperature was 100·4° F., with the pulse slightly over 100. The breathing, although faster than normal, was not hurried. At this time he found no adventitious sounds in the lungs, and thought she was developing a bronchitic attack; on the following morning her condition had become worse, and as the family were getting anxious I was asked to see her in consultation with him that evening. On my examination I found an indistinct cyanosis over the body. The temperature was 101·2°, the pulse 110, the rhythm was regular, volume small, with moderate tension. Respiration was 38 to the minute but not laboured. She had a short cough, but only a small quantity of expectoration, which was viscid and difficult to get up. The urine was normal. On percussion of the chest there was a slight but uniform impairment of resonance. Vocal fremitus was difficult to elicit but it seemed diminished. On auscultation vocal resonance was diminished, and over the whole lungs from apices to bases small hard crepitant râles were to be heard. The heart sounds were perfectly clear and the condition of the arteries was, for her age, good.

The French writer, Woillez, described a condition which in some respects agrees with this case—viz., defective resonance, moderate cough, with râles in the lungs and a slight temperature, but he mentions an initial chill and pain in the side. My cases did not have either an initial chill or pain in the side, just a feeling of constriction in the chest.

PROBABLE CAUSES OF SECONDARY ORIGIN.

What is this affection? Is it of primary or secondary origin? I shall briefly discuss a few probable causes of secondary origin:—

1. *Œdema of the Lung.*—If it was due to this cause there would have been a profuse discharge of thin, bloody, frothy fluid—there might be pints of it in a short time, if the patient survived, whilst in my cases there was only a small quantity of viscid mucus. This of itself excludes œdema.

2. *Back Pressure from Cardiac Disease.* — This pressure is of a slow insidious nature, following on an endo- or myocardial condition, or both combined, but in these cases there is usually a history which draws attention to the cardiac region. The patient may only suffer from shortness of breath on slight exertion or puffiness of the ankles, &c., and if the effect of the back pressure shows in the lungs it will be concentrated at the bases, also the degenerative process is usually slow and covers a considerable period of time. If the trouble is brought on by sudden and severe exertion the condition then is primarily cardiac and the symptoms are heart symptoms, with alteration of rhythm and of tone in the sounds in the right side of the organ, and probably an increased area of dullness; in these cases, if the lungs are affected at all after the initial engorgement has passed off, it will probably be something of a bronchitic character.

3. *Abnormality of Kidney Function.*—Renal origin may, I think, be excluded, as the kidneys in all of my cases were functioning well.

4. *New Growths.*—These may also be excluded, as histories and signs were all against such causation.

5. *Inflammatory Trouble in the Lung.*—In this connexion we have the history of rigors, high temperature, high pulse-rate, &c., at the commencement of the attack, and later, dullness on percussion and increased vocal fremitus and resonance, unless there is only a small patch involved in the centre of a lobe. The crepitant stage is transient and passes rapidly into the stage of consolidation. Tubular breathing, which is pathognomonic of inflammatory consolidation of lung tissue, is certain to be detected early in ordinary cases, or later if the lung is massive. None of these signs or symptoms applied to my cases; unfortunately, I was not able to see the condition post mortem.

I came to the conclusion that it was a primary acute congestion of the lungs, attacking without apparent cause, of short duration, and always fatal in two to three days.

I have chosen the above seven conditions as being the most interesting that I have experienced during the 35 years I have been interested in the diagnosis and treatment of pulmonary conditions.

RATS IN THE PORT OF LONDON.—Dr. W. M. Willoughby, medical officer of health for the Port of London, reports that 2522 rats were destroyed in warehouses from Oct. 23rd to Nov. 26th last. On vessels voyaging to the Port 1055 rats were killed, and 2024 on vessels in dock. The total number of rats destroyed since February, 1901, was 1,209,169.

BRECHIN INFIRMARY.—The annual report shows that 207 patients were treated during the year, 148 being surgical and 59 medical. There were 739 electrical treatments, 23 operations, and 1309 outdoor dressings. The income amounted to £2084 2*s.* 5*d.*, which included a donation from the Prince of Wales's Fund. The expenditure totalled £2078 4*s.* 9½*d.*, leaving a balance of about £6. A year ago there was a deficiency of nearly £700, which was met from capital account.

DUODENAL ULCER IN INFANCY.*

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IN reviewing the literature on this subject one cannot help being struck by the very few cases of duodenal ulcer in infants reported from this country compared with those observed in America and on the continent. Of about 100 cases reported up to date only three were from the United Kingdom, and the question arises as to whether this condition does not exist in the infants of the British Isles to as great an extent as elsewhere, or whether our post-mortem examinations are at fault. It is certainly felt that duodenal ulcers may be present in a larger number of marasmic infants than is at present admitted. In this country T. D. Lister [1] reported in 1899 a case of melæna neonatorum in a child aged 3 days; the child had a well-marked duodenal ulcer. H. H. Borland [2] reported in 1903 a case complicating acute eczema in an infant aged 2 months. Finney [3] showed specimens of a case associated with pyloric stenosis, aged 10 weeks, at this Society in 1908—the only case in an infant of the marasmic type that I can find reported in this country. In America during 1908, however, Helmholtz [4] reported a large series of cases and brought the bibliography of the condition up to date. The next outstanding and exhaustive contribution to the subject was made by L. E. Holt, [5] of New York, who summarised the literature up to the year 1913 with a report of four cases. Since that time several others have contributed to the subject, among them being Helmholtz and Gerdine, [6] Veeder, [7] Brown, [14] Griffiths, [8] Adriance, [9] Ashby, [13] Comby, [11] Barlton, [15] and Palmer. [17] Moynihan [10] refers to a number of these cases in his book on duodenal ulcer.

Frequency: Sex and Age.

In 1800 autopsies in infants Holt [5] reports four cases of duodenal ulcer. Two cases are reported by me as the only cases found during the past 21 months at the Great Ormond-street Hospital, in which period 566 autopsies have been performed on children, of whom 62 per cent. were under 1 year old. I can find no other record of a case in the past 20 years at this hospital. Holt [5] states that of 65 cases 70 per cent. were between 6 weeks and 5 months old and only seven were over 5 months, while nine were newly born. In 45 cases 25 were in males and 20 in females. The age groups can thus be divided into those cases of ulcers in which bleeding and death takes place in the first week of life, the so-called cases of melæna neonatorum; those cases occurring after the first week of life and up to about one year; and, finally, those cases occurring in children over the age of 1 year, the vast majority being due either to miliary tuberculosis or to burns.

Ætiology and Causation.

As predisposing causes it seems agreed that there are two main factors—lowering of general vitality and previous digestive disturbance. It seems generally agreed that duodenal ulcer is due to a thrombosis of one of the small vessels in the duodenum with autodigestion of the affected area. There is considerable evidence that the primary cause of the thrombosis is probably infective. Helmholtz and Gerdine [6] pointed out that in their first series 12 cases occurred in the last four months of 1908, while there had been no cases during the previous eight months or during the whole of 1909. They also drew attention to the fact (as do Holt and Comby) that of Holt's four cases three occurred in three months.

In their second series of cases the epidemic character of this complaint was even more strikingly shown.

* A paper read before the Section of Study of Disease in Children, Royal Society of Medicine, when specimens of two cases were shown.

From September to April they observed 11 cases; the two reported by me occurred within a week of each other. The experimental evidence of Rosenow[12] seems strongly to bear out this epidemic character. Rosenow was able to isolate a *Streptococcus viridans* from a duodenal ulcer in pure culture; injecting it intravenously into dogs, rabbits, and a monkey, he produced hæmorrhage and ulceration in the stomach and duodenum. He claimed that the ulceration is due to a localised infection and a secondary digestion. In 10 of 14 ulcers examined microscopically in Helmholtz's cases diplococci were observed in the base of the ulcer. Diplococci were seen in all of the eight cases of Helmholtz and Gerdine.

Helmholtz considers that the ulcers are due to a streptococcus of particular virulence for the following reasons: (1) The appearance of duodenal ulcer in epidemic form; (2) the presence of diplococci and streptococci in all the ulcers in his cases; (3) the isolation by Rosenow[12] of a *Streptococcus viridans* in pure culture from an ulcer which, when injected into rabbits and dogs, produced ulcers and hæmorrhage in the stomach and duodenum.

Burns.—That duodenal ulcer is found secondary to burns there is no reasonable doubt; that extensive burns which, becoming infected, give rise to this condition more often than do less extensive and non-infected burns would favour Helmholtz's contention. The case reported by Ivan E. Ashby,[13] of Adelaide, deserves special attention. The infant was 11 weeks old and received severe burns over a large part of the body. The child seemed to do well, but in a week began to vomit and passed tarry stools. Seventeen days after the burn occurred the child died, and a large circular ulcer 13 mm. in diameter was found in the duodenum. It is interesting to note that Beattie and Dickson[19] in their latest edition of special pathology state that they have never seen any post-mortem evidence of burns causing duodenal ulcer.

The remarkable case of Borland[2] should also be quoted as pointing to the infectious origin of this condition. The infant, aged 8 months, had had eczema of the scalp since it was 2 months old. Seven days before death the eczema suddenly became acute and the face became œdematous, the formation of large pustules indicating the presence of a very definite infection. The child vomited blood and tarry stools followed. At autopsy a perforated ulcer was found opening into the lesser sac, which was filled with blood.

Other experimental work on the production of ulcer might be mentioned. Jona[15] claims to have produced duodenal ulcer in dogs by the injection of decomposing animal tissue, and found that inhibition of the saliva or pancreatic juice aided the production of these ulcers. By tying the pancreatic duct he was able to produce ulcers in both stomach and duodenum. Freidman[18] claims to have produced ulcers in dogs by the repeated injection of pituitrin solution. That the ulcer is due to a secondary auto-digestion there can be no reasonable doubt, as all ulcers reported have been above the papilla, and this area is subjected to the acid stomach contents before it can be neutralised by the alkaline pancreatic secretion. Tuberculous ulcers, usually formed during a general tuberculosis, have been reported, and Helmholtz and Gerdine report three cases between two and ten years in which the tubercle bacillus was the causal organism.

Morbid Anatomy and Symptoms.

Over 70 per cent. of the cases had a single ulcer, but in some of the remainder there were two and in some three ulcers. In no case was the ulcer below the papilla. The ulcers were invariably in the posterior wall of the duodenum, varying in size from 1 mm. to more than 1 cm. Their depth varied from a slight definite erosion of the mucous membrane to a deeply punched-out ulcer which—completely in some cases and almost completely in others—perforated the wall and surrounding tissue. In some cases where there had been acute collapse with much blood in the stools large clots of blood were found in the bowel. Other conditions, such as pneumonia, meningitis, jaundice, colitis, melæna neonatorum, and pyloric stenosis were found along with the ulcer. In a large proportion, however, nothing was found but the ulcer in a marasmic child. Microscopically very few signs of inflammatory reaction are seen about the ulcers.

Undoubtedly the vomiting of blood and the passing of blood in the stools is the most characteristic and important sign of this condition. Holt states that one-third of all the cases give no symptoms of ulcer; some showed sudden hæmorrhage with collapse and death. Of 64 cases, 28 had blood in the stools and 10 in the vomit. It has been shown that this condition may be associated with pylorospasm and congenital pyloric stenosis. In a certain proportion there is a history of continual vomiting and chronic gastro-intestinal upset, as seen in one of the cases reported. In this type no blood is seen in vomit or stools. Abdominal pain seems to be present, as noticed by the facies of the child and the drawing up of the knees. Holt recommends the use of a duodenal catheter as an aid to diagnosis.

FIG. 1.

CASE 1.—S = Stomach. Py = Pylorus and duodenum, showing punched-out ulcer, U, half-way between pyloric ring and papilla—Pa.

Diagnosis and Treatment.

The diagnosis is extremely difficult, and is, in the vast majority of cases, not made. Duodenal ulcer should, however, be suspected if there is a history of tarry stools or bright blood in the stools in a marasmic infant with previous gastro-intestinal upset—not, however, until such common conditions as colitis, intussusception, and polypus have been excluded.

That proven cases can recover is shown by the remarkable instance reported by Palmer.[17] Duodenal ulcer was diagnosed in a patient aged 6½ months, whose abdomen was opened despite the very bad condition; an ulcer was found, pyloroplasty was performed, and a few days later when the patient showed signs of improving gastro-enterostomy was done. The patient made a complete recovery. Palmer attributed his success to doing the operations in two stages. Other cases clinically diagnosed ulcer have recovered, but the number is exceedingly small, and the diagnosis sometimes exceedingly doubtful.

CASE 1.—H. L., female infant, aged 3 months, admitted under Dr. G. F. Still into the Great Ormond-street Hospital, July 26th, 1921. Complaint, diarrhœa and vomiting; patient had been breast-fed and had vomited practically from birth, the vomits being large, following immediately after the feed, and the motions streaked with blood, green, and offensive. Patient was put on dried milk, but made no

progress up to admission. When examined she was a small, very pale infant. There seemed to be a general œdema; circulatory system, normal; respiratory system, bronchitis present; nervous system, normal. Stools green-brown, at times dark, but no blood detected in them; urine negative. Temperature normal, pulse 120–140, Wassermann reaction negative, no vomiting, cough frequent. Died on tenth day after admission. The diagnosis of duodenal ulcer had been suggested in this case in life.

Autopsy.—Length 21 in., weight 16 lb. 4 oz., general slight œdema, purulent bronchitis, and broncho-pneumonia at right base; liver pale and fatty, weight 5 oz. An ulcer, 1 cm. in diameter, found in the posterior of the duodenum between the pyloric ring and the papilla. The ulcer was deeply punched out and had muscle for its base. The tissue about the ulcer seemed indurated.

CASE 2.—O. M., male infant, aged 6 months, admitted under Dr. Still into the Great Ormond-street Hospital. Complaint, wasting since birth and indigestion. Patient was a premature infant fed at first on cow's milk and water, then on several dried foods. Motions never satisfactory, but no blood seen in them. Latterly the child had been constipated, but two days before admission the motions had become better again. On admission he was a pale wasted infant, liver palpable, spleen not palpable, circulatory, respiratory, nervous systems nil. Three days after admission showed symptoms of acute intestinal upset; motions, up to that time infrequent, became frequent; they were green, and contained slime and mucus. The child was restless and looked the picture of a case of summer diarrhœa — toxic and dehydrated. Died on the sixth day after admission.

FIG. 2

CASE 2.—Double ulcers at U, lying between the pylorus (Py) and the papilla (P).

Autopsy.—Length 22 in., weight 5 lb., 8 oz. Brain alone congested, thorax and contents normal, stomach seemed natural. In duodenum two small definite ulcers half way between pylorus and papilla, shallow, and only penetrating to the submucous tissue. The upper one was slightly deeper than the lower one, and each was 1 mm. in diameter. The remainder of the small intestine showed a catarrhal condition only, but in the colon there was an acute ulceration of the solitary follicles present.

Bacteriological Report.

The following report was made on Case 2 by Dr. David Nabarro:—

Unfortunately, no microscopical or bacteriological investigation of the duodenal ulcer was made. From the lower part of the colon, which was markedly injected, an organism of the type *B. coli anaerogenes* was isolated. It produced acid (but no gas) in glucose, mannite, and lactose in two days; in maltose in six days; no acid in saccharose; acid or acid and clot in milk; no indol. It was non-motile.

This organism, or variants of it, has been isolated from a considerable number of cases of summer diarrhœa admitted to the Hospital for Sick Children last summer. They are being investigated at present, and when the investigations are complete we hope to publish a detailed account of the clinical, post-mortem, and bacteriological findings.

Case 1 illustrates a case of marasmus with melæna, the symptoms being suspicious enough to warrant a provisional diagnosis of duodenal ulcer. Case 2 illustrates the infectious nature of this complaint, as it is associated with definite follicular colitis. Both cases occurred during the summer diarrhœa season.

Conclusions.

1. Duodenal ulcer is a rare condition in infants, but more careful examination of the duodenum in marasmic infants may show it to be more common than is at present admitted.

2. Ulcers may be present in melæna neonatorum. In older infants they may follow on any gastro-intestinal upset.

3. They may certainly complicate extensive septic burns or septicæmia. Tuberculosis is the common cause of duodenal ulcers in older children.

1. The diagnosis of duodenal ulcer is difficult and usually not made.

5. Duodenal ulcer may be successfully treated by operation.

I must thank Dr. G. F. Still for allowing me to publish these two cases.

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SYMPTOMS AND FREQUENCY OF ULCER OF THE LESSER CURVATURE OF THE STOMACH.

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SINCE it became evident that it is possible to diagnose by means of the characteristic X ray picture of the hour-glass stomach caused by spastic contraction of the great curvature with certainty a chronic ulcer of the lesser curvature of the stomach, it has been shown that this disease is now discovered more and more frequently in patients with chronic painful dyspepsia, in whom we should not be inclined to diagnose an ulcer. It has been shown that in many cases of ulcer of the lesser curvature the symptoms diverge in several important respects from the clinical picture usually found in chronic ulcer. The reason is that the typical picture of gastric ulcer evolved in the last decade is primarily based upon the study of the adjacent pyloric ulcer. Round about 1900 Soupault showed it was the chronic ulcers of the pylorus or its immediate neighbourhood, the juxta-pyloric ulcer, that gave rise to the "pyloric syndrome" characterised by late pains some hours after food, in association with hypersecretion, and that the Reichmann symptom-complex was caused by such ulcers, as were the accompanying disturbances of motility, which were naturally explained in this way. After these investigations were confirmed and extended by Rubow (1906) and Kemp (1909), and after

Moynihan had simultaneously drawn attention to the significance of the late pains, which he named hunger-pains, in the diagnosis of ulcer of the duodenum, our knowledge of the juxta-pyloric ulcer and its characteristic symptomatology was further developed by the work of Mathieu in France and by my own work in Denmark. As a matter of fact, the clinical picture of this disease is one of the most characteristic in medicine, and is often easy to recognise by merely questioning the patient.

It is different with ulcer of the lesser curvature, which more correctly should be named ulcer of the corpus of the stomach. The subjective symptoms, the course of the disease, and the result of the function test are none of them the same. In order to gain more information I have analysed the 50 cases of undoubted chronic ulcer of the corpus of the stomach treated during recent years in the medical department of the State Hospital (Rigshospitalet), Copenhagen. The diagnosis was made by the demonstration of hour-glass constriction with X rays, with or without Haudek's notch. The notch was found 19 times, and in 19 of the cases the diagnosis was confirmed by operation. Of the 50 cases, 40 were females and 10 were males.

Symptoms.

In all 50 patients severe chronic ulcers had produced symptoms for a long time. The duration of the symptoms before admission to hospital will be seen from Table I.

TABLE I.

(A) = Duration of symptoms in years.

(A)	Males.	Females.	(A)	Males.	Females.
Under 1 ..	1	2	20–30 ..	2	14
1–5 ..	1	1	30–40 ..	–	15
5–10 ..	5	3	40–50 ..	–	3
10–20 ..	1	12		—	—
				10	50

It will be seen that the disease has a very long duration, particularly in women, for there had been symptoms for over 10 years in 34 (85 per cent.), and for over 20 years in 22, that is, more than half (55 per cent.). This is very different from the conditions usually found in the chronic juxta-pyloric ulcer. For the sake of comparison some statistics collected by Aage Nielsen from the State Hospital, Copenhagen, may be cited. They comprise 61 cases of juxta-pyloric ulcer, the localisation of which was determined by operation; 23 ulcers were located in the pyloric portion of the stomach, 24 in the pylorus itself, and 14 in the first part of the duodenum. Of these 61 patients only half had had symptoms for over 10 years, and only 21 per cent. for over 20 years, before admission to hospital for operation. The reason for the difference seems to be that the symptoms in ulcer of the corpus are on the whole less pronounced, and that this variety of ulcer does not lead to actual stenosis which makes the condition intolerable.

The ages at which the 50 ulcers of the corpus in my series began to show symptoms were as given in Table II.

TABLE II.

(A) = Age in years at which symptoms began.

(A)	Males.	Females.	(A)	Males.	Females.
10–20 ..	–	17	50–60 ..	1	–
20–30 ..	3	10	60–70 ..	–	1
30–40 ..	2	8		—	—
40–50 ..	4	4		10	40

It will therefore be seen that the ulcers have a longer course, and begin at an earlier age, in women than in men. The latter fact is in harmony with many other series of statistics dealing with the appearance, irrespective of site, of gastric ulcers in the two sexes.

Passing next to the investigation of the symptoms themselves in ulcer of the lesser curvature (corpus), the question arises how often do we meet with those symptoms described as characteristic of the juxta-pyloric ulcer. The most important of these symptoms are the hunger-pains which regularly appear one or more hours after a meal, or at any rate after a large meal, and which also frequently arise during the night. Such hunger-pains were present in only 8 out of 40 women, but in 7 out of 10 men. It was also reported that in about 12 women and 4 men the pains were relieved by food. The late pains are thus a much rarer phenomenon in ulcer of the corpus than in juxta-pyloric ulcer, and they are absent in most of the patients. A still greater difference is to be found with regard to the gastric secretion, which can be proved by giving a test-meal. The hypersecretion characteristic of juxta-pyloric ulcers was hardly ever found in ulcer of the corpus. The so-called digestive hypersecretion, characterised by the abnormally large contents of the stomach after an Ewald test-meal, was found in 4 women and 3 men. Only in these cases did the stomach contain more than 150 c.cm. one hour after taking 250 c.cm. weak tea and 35 g. of rusks. It may be added that hyperacidity was only found in 8 women and 3 men.

Disturbances of motility might be presumed to to be absent in ulcer of the corpus, since, as is well known, they are so extremely common in juxta-pyloric ulcers. They were, however, not at all rare. The motility was investigated at our hospital by giving the patients a test-meal consisting of some rice-pudding with eight dried plums and a dessert-spoonful of cranberry preserve. After 12 hours had passed a "large retention"—that is to say, more than a couple of c.cm. of residual food—was found in 5 women and 1 man, but a "small retention"—scanty remains of food, some small particles of plums, some cranberry seeds, &c.—was found in 10 women and 4 men. A "large retention" was further found on examination of the contents of the stomach six hours after taking a meal in 12 women and 3 men. The power of the stomach to empty itself was thus found to be deranged in at least 25 women and 6 men. It may also be stated that vomiting was a marked symptom in 18 women and 2 men, and that hæmatemesis or melæna had been present in 22 women and 7 men. Finally, the course of the disease in the 29 women and the 6 men was distinctly periodic, often with long periods free from pain, which were usually present in the summer.

It is therefore obvious that the clinical picture in ulcer of the corpus usually differs very greatly from that found in juxta-pyloric ulcer, particularly in women. When the late, or hunger pains, are absent the picture is quite different, and the disease cannot be distinguished by its subjective phenomena from any other painful dyspepsia. There is also the absence of hypersecretion and the rare appearance of hyperacidity. When there has not been much bleeding it is only the pronounced periodic course which makes it probable that the pains are due to a chronic ulcer. The difference between the symptoms of ulcer of the corpus and juxta-pyloric ulcer is further evident from Table III., in which the 50 ulcers of the corpus are compared with the 61 undoubted juxta-pyloric ulcers already mentioned.

TABLE III.

(A) = 61 juxta-pyloric ulcers (41 males, 20 females).
(B) = 50 corpus ulcers (10 males, 40 females).

	(A)	(B)
Hunger-pains present in	57	15
Relieved by food	32	16
Vomiting	48	20
Gastric hypersecretion	45	7
(Stomach contents more than 150 c.cm.)		
Delay in emptying, total	50	31
12 hours, large retention	30	9
12 hours, small ,, ...	8	14
Hyperacidity	13	11
Marked hæmorrhage	13	11
Distinct periodicity	44	33

It will be seen the difference is greatest in the first items, which comprise the subjective symptoms and the hypersecretion, and that a considerable delay in emptying the stomach is much more common in juxta-pyloric ulcer than in one situated in the corpus. On the other hand, a small 12 hours' retention is more frequent in the latter, while hyperacidity,

hæmorrhage, and periodicity are equally common in both varieties of ulcer.

Frequency.

Of the 50 cases, 40 were women and 10 were men. Extensive statistics have long pointed to a greater frequency in women. Brinton gave the proportion as 2 to 1, Welch as 3 to 2, Martin as 2 to 1. But surgeons have asserted of late that gastric ulcer—particularly the duodenal form—is really commoner in men than in women. Out of 1000 ulcers of the stomach and duodenum Mayo found 745 in men and only 253 in women; Rovsing, on the ground of his operative experience, calls the belief that gastric ulcer is more frequent in women a "clinical delusion." The explanation obviously lies in the difference between corpus ulcer and juxta-pyloric ulcer. The latter has been more subjected to surgical treatment, and in this class males predominate. Of 85 surgical ulcers diagnosed as juxta-pyloric, Aage Nielsen found 53 in men and 32 in women. Of the 61 cases previously mentioned, in which the position of the ulcer was determined by operation, 41 (67 per cent.) were in men and 20 (33 per cent.) were in women. The preponderance of men over women was just as great in the 23 ulcers localised in the stomach just over the pylorus—viz., 17 to 6—as in ulcers situated in the pylorus itself, and in the adjacent portion of the duodenum—viz., 23 to 14.

It is therefore clear that there is a very marked difference in the incidence of corpus and juxta-pyloric ulcer in the two sexes; the former is much commoner in women, the latter in men; it may be assumed the reason statistics have hitherto been so contradictory is because they have comprised varying proportions of the two kinds of ulcer. This peculiar state of affairs also throws light on other important phenomena relating to the appearance and course of gastric ulcers. While the French and Danish schools in particular have adopted the division of ulcers into juxta-pyloric and those far-removed from the pylorus, other authors, especially the Englishmen, Fenwick (1900), Martin (1912), and more recently Bolton (1913), have particularly favoured the classification into acute (fresh) and chronic ulcers, and have demonstrated quite a characteristic difference in their distribution in the two sexes. Fenwick has shown that the acute ulcer is far commoner in women than in men. In material consisting of 89 open ulcers, he found that out of the 30 acute ones, 3 were in men and 27 in women, while of the chronic ones 43 were in men and 16 in women. This observation is supported in an interesting manner by some statistics collected in our hospital. Out of 56 patients with ulcers which were so recent that the symptoms had not lasted over a year, 41 were women and 15 men. Out of 18 of these patients in whom the symptoms had not lasted over half a year, 16 were women and only 2 were men. These 18 cases of ulcer further showed signs of freshness in that they were all definitely cured by a single course of medical treatment. Quite a similar distribution between the two sexes has been demonstrated in the case of the cicatrices of healed gastric ulcers. There are three sets of statistics in Denmark which clearly define the relation.

Harslöf examined the reports of 5196 autopsies in the municipal hospital in Copenhagen, and found gastric ulcers or cicatrices in 4 per cent., 1·3 per cent. of the ulcers were in men, and 3·8 per cent. in women; only 0·3 per cent. of the cicatrices were in men, but 5 per cent. were in women. In an ordinary post-mortem examination, however, cicatrices are easily missed. A greater number were found by Scheel, therefore, who personally made 2753 post-mortem examinations with great care, finding 8·5 per cent. ulcers and cicatrices. There were 2·6 per cent. open ulcers in men and 4 per cent. in women, but 1·6 per cent. cicatrices in men and 10·6 per cent. in women. Grünfeldt in 1881 found a still larger number in a series of cases which only comprised men over 50 and women over 60, in the general hospital and the workhouse. Out of a total of 1150 autopsies he found cicatrices in 11 per cent., of which 4 per cent. were men and 16 per cent. women; and out of 450 autopsies where the stomach was examiued with particular care he found cicatrices in 20 per cent., of which 7 per cent. were men and no less than 32 per cent. were women.

It is presumably Grünfeldt's figures which are behind Fenwick's statement that gastric ulcer is an unusually common disease in Denmark, a view which is also held by Bolton. Harslöf's statistics are elaborated in the same way as those of the hospitals in other countries, and his estimate of 4 per cent. is in perfect agreement with the results from other places. There is therefore no reason to assume gastric ulcer is commoner in Denmark than in other countries. As far as the above statistics go, therefore, it has been shown that recent acute ulcers are much more commonly found in women than in men, and that they far more frequently heal up in women, because cicatrices are found in a much larger proportion of them. This fact gains an added interest when the situation of the ulcers and cicatrices are investigated. Fenwick shows the acute ulcers are considerably more common in the corpus of the stomach than in the pyloric portion, but chronic juxta-pyloric ulcers, on the contrary, are most often observed in the pyloric region. He imagines the stomach divided into three parts, and obtains the figures given in Table IV.

TABLE IV.

	Acute ulcer.	Chronic ulcer.
Pyloric portion	33·3 %	75·7 %
Middle ,, ...	36·0 %	10·0 %
Cardiac ,, ...	30·0 %	14·0 %

According to these findings, therefore, only a third of the acute ulcers, but three-quarters of the chronic ones, are situated in the pyloric portion. A similar relation holds in the case of cicatrices. Bolton reports on 37 recent ulcers and cicatrices, grouped as Table IV.

TABLE V.

	Ulcers.	Cicatrices.
Pyloric portion	7	3
Middle ,, ...	1	2
Cardiac ,, ...	9	15

Here also cicatrices are far commoner in the corpus (17) than in the pyloric region (3). Grünfeldt's statistics unfortunately do not admit of an accurate localisation of the cicatrices, but he also finds the majority present in the middle portion of the stomach—that is to say, in the corpus. The close agreement between the locality of the recent acute ulcers and cicatrices is very interesting; it also explains the much commoner occurrence of both in women, by their situation in the corpus of the stomach. An interesting clinical confirmation of these observations is obtained from the 56 cases, all of which were under treatment at latest a year after their symptoms started. As mentioned, 41 of these patients were women and only 15 were men. The symptoms displayed by the patients were in most cases quite unusual—i.e., pains or heartburn soon after food, or quite irregularly. Only on the strength of the hæmatemesis could the diagnosis be made; 12 cases (7 men and 5 women) showed marked signs of a juxta-pyloric ulcer with hunger-pains which were relieved on taking food, together with more or less hyper-secretion and delay in emptying the stomach. In the majority of these patients the symptoms developed so quickly that they were operated on quite early. This was the case for 5 men and 2 women, in all of whom a juxta-pyloric ulcer was discovered, twice in the duodenum and 5 times in the pyloric region of the stomach. There remain, recent ulcers in 8 men and 36 women, which all lacked the characteristic symptoms of juxta-pyloric ulcer. This in conjunction with their overwhelming frequency in women shows that they were situated in the corpus of the stomach, at any rate the vast majority of them.

Summary.

If we compare the various investigations the following conclusions may be drawn:—

1. Gastric ulcer situate in the corpus of the stomach (on the lesser curvature) is commoner in women than

in men. Juxta-pyloric ulcer is more frequent in men than in women. Gastric ulcers are chiefly ulcers of the corpus in women, and juxta-pyloric ulcers in men.

2. Statistics of post-mortem examinations show that gastric ulcer is commoner in women than in men. Ulcer of the corpus may therefore be assumed to be the more frequent variety.

3. On account of their symptoms and course juxta-pyloric ulcers make easier subjects for surgical treatment than ulcers of the corpus; for this reason statistics of operative material so often show a preponderance of men.

4. Ulcer of the corpus, which might be called the women's ulcer, has a more favourable course than the juxta-pyloric. It heals more easily, and the raw ulcer found post mortem has, more often than the juxta-pyloric, the character of a fresh acute ulcer.

5. Ulcer of the corpus often lacks the symptom-complex so characteristic of the juxta-pyloric ulcer, especially the late pains and the hypersecretion. This obtains in the case of recent and chronic ulcer of the corpus.

6. We may presume a large number of ulcers of the corpus, as a rule in women, make their appearance and get well again without the diagnosis "gastric ulcer" being made.

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PERCUSSION AND THE WIDTH OF THE HEART.

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IN spite of the insistence of many able observers for many years on the value of digital percussion in determining the width of the heart, supported by careful post-mortem verification, it has recently been suggested that percussion has no such value. It has also been asserted—even officially laid down in instructions to medical boards—that the size of the heart can be more exactly determined in the recumbent position than in the upright! As I regard the first statement as a grave retrogression in cardiology, the outcome of defective percussion, and the second as contrary to recently established fact, it has seemed to me important to devise some means of immediate verification or correction of our percussional estimates of the heart's width. The X rays obviously lend themselves to this purpose and have the great advantages of being immediately applicable to structures unaltered by death, and of being available in many more cases than those examined post mortem.

The method I have adopted is simple. The cardiac limits of dullness to right and left are carefully ascertained and marked on the skin with a pencil. Over these marks short pieces of wire are placed and fastened to the surface with adhesive plaster. The chest is then screened and photographed.

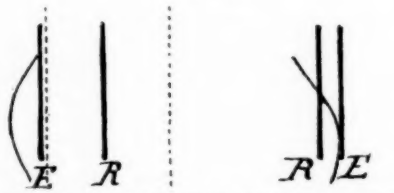
The results thus obtained enable me to say: (1) That in the *erect* position it is possible by percussion to define the rightward and leftward limits of the heart with sufficient accuracy to make this means of diagnosis at least as valuable as it has always been considered; and (2) that in the *recumbent* position no such accuracy can be attained—indeed, no accuracy at all, since the results of percussion fall far short of the true width.

Thus the statements which I have repeatedly published on this subject are fully borne out by radiography. It should be observed that in the cases quoted the rightward limit of the heart could only be determined by percussion or by radioscopy.

The following precautions are, however, necessary in photographing such cases: (*a*) The patient must stand quite square to the plate. Fig. 5 shows the result of a moderate turn to the left; the rightward wire *A* makes the fact of such a turn quite certain, because whereas it appears in the picture almost in the middle of the shadow of the vertebræ, it was actually fastened on the skin a good half-inch to the right of the midsternal line. (*b*) The chest must not be allowed to press against the back of the screen, because in fat persons, especially in women, the skin with the wires attached to it easily becomes displaced. Fig. 6 shows a wire, *B*, attached vertically, thus pushed into a diagonal position. (*c*) In the case of women with much mammary tissue the satisfactory attachment of wires is difficult, and for purposes of investigation I have avoided such patients. The accompanying figures illustrate what I have said. They have been drawn carefully to scale from skiagrams. The vertical dotted lines indicate the position of the spinal column, the thick straight lines represent the shadows of the wires, the curved lines the outlines of the cardiac shadow. The wires marked *E* indicate the lateral limits of cardiac dullness in the erect posture, those marked *R* its limits in the recumbent posture.

CASE 1 (Fig. 1).—J. L., male, aged 40. Slightly dilated heart. History: At the end of 1916 he was thrown from an ammunition wagon and a gun went over his chest. Since then has had sudden attacks of pain in various parts of chest, taking away his breath. Sent into hospital to be X rayed for possible aneurysm. Physical signs: Apex beat in nipple line. Slight soft systolic murmur to right of apex beat (recumbent position). Systolic murmur over aortic area (same position). No aneurysm.

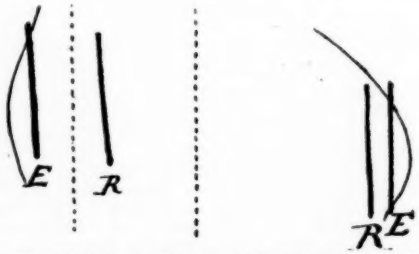
1.



CASE 1.—Marked and photographed both in the standing and recumbent positions. Only the erect heart outlines are given. The recumbent heart shadow was just a little broader and fainter.

CASE 2 (Fig. 2).—W. J., male, aged 38. Aortic regurgitation. History: Motor accident, February, 1915. Discharged from the army, March, 1915. Physical signs: Apex beat fifth space just outside left mammary line. Diastolic murmur heard on some days, not on others. On March 20th, 1920, I found it quite inaudible with double stethoscope, very doubtfully present with straight wooden one, but clearly audible with ear on the chest wall (erect position).

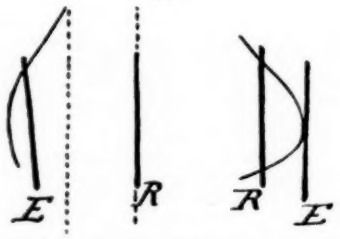
2.



CASE 2.—Marked in standing and recumbent positions. Photographed standing.

CASE 3 (Fig. 3).—V. H., female, aged 8. Mitral regurgitation. History: Rheumatic fever, 1916, 1917, 1919. Physical signs: Slight præcordial bulging, wide impulse,

3.



CASE 3.—Marked in standing and recumbent positions. Photographed standing.

epigastric impulse, loud systolic mitral murmur, no aortic murmur, second sound over pulmonary area reduplicated.

CASE 4 (Fig. 4).—F. R., male, aged 47. Aortic regurgitation. History: Discharged from the Army, June, 1917, for valvular heart disease, unsuspected till February, 1916, when he had a "bad septic throat." "Very bad rheumatism" in

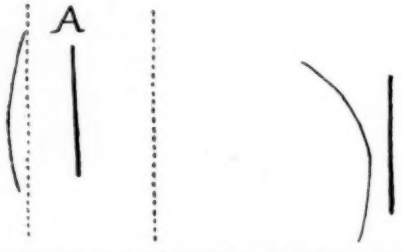
4.

CASE 4.—Marked and photographed standing only.

India in 1896, when he was a month in bed. First seen by me on Oct. 10th, 1918, when he had albuminuria (a dense cloud on boiling and adding acetic acid), very severe headache, and persistent vomiting. The albuminuria and vomiting disappeared in a few weeks; there is slight morning headache on rising. General condition and heart better. Physical signs: Well-marked "double aortic" murmur. Heart hypertrophied and dilated. Visible pulsation of carotids. No aneurysm.

CASE 5 (Fig. 5).—W. S., male, aged 40. Aortic regurgitation. History: First reported sick in December, 1917. When loading wagons at the Front he became short of breath and

5.

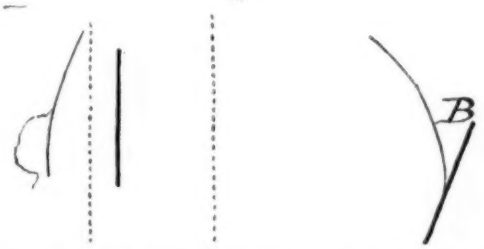


CASE 5.—Marked and photographed standing only. (Has evidently turned slightly towards the left whilst the plate was being substituted for the screen, as the rightward wire *A* was well to the right of the mid-line on the chest.)

suffered from "increased action of the heart"; when stooping to lift heavy weights his head seemed to swim round. The doctor found "nothing wrong." Sent to Salonika and "carried on" until April, 1919, then sent to hospital for "rapid pulse"; and was said to be unfit to travel home. Physical signs: Pulse suggests aortic regurgitation. Carotid pulse visible. Well-marked "double aortic" murmurs along the sternum, the diastolic murmur being also heard at the apex beat.

CASE 6 (Fig. 6).—I. R., female, aged 52. Mitral stenosis and regurgitation. History: Chorea at 10 probable origin. For two years has suffered from shortness of breath on going uphill. Within last one and a half years has had to take to her bed occasionally. Physical signs: Apex beat in fifth space nipple line. Well-marked presystolic and systolic

6.

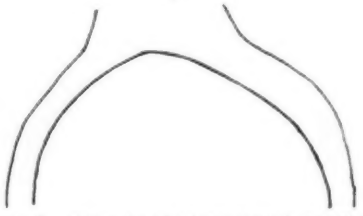


CASE 6.—Marked and photographed standing only. Obliquity of leftward mark *B* due to skin-movement caused by pressing chest against screen.

mitral murmurs, no aortic murmur, second sound over pulmonary area reduplicated.

CASE 7 (Fig. 7).—E. C. N., male, aged 76. Dilated heart; emphysema. History: Seen over 16 years ago for Stokes-Adams syndrome. Pulse then 24 and a fit every two to three

7.



CASE 7.—Marked and photographed standing.

minutes. That was in March, and he was hunting again in November! No similar attack since. Now complains of shortness of breath. Physical signs: Vary. Sometimes, as on this occasion, heart much dilated; sometimes dilatation seems less; but he *is emphysematous*. Urine, faint trace albumin, not constant; pulse 40, usually said to be 35, slightly tense; apical high-pitched systolic murmur. Effect of emphysema shown in dullness everywhere within the true cardiac dimensions.

My best thanks are due to my colleagues, Dr. J. D. Harris and Dr. F. A. Roper, for the radiological help they have so kindly given me.

THE MENTAL FACTOR IN VISCEROPTOSIS.

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FOR many years it has been a common and rather puzzling observation that a mobile kidney (usually the right) is associated with nervous symptoms. Mobility of the kidney is nowadays becoming recognised as a mere part of a general visceroptosis, so that the modern form of the observation would be that *visceroptosis* is very frequently associated with nervous symptoms.

On the other hand, physicians who, like myself, see large numbers of neurotic patients, must have been struck by the frequent occurrence of gastric dilatation and visceroptosis among them, especially if they make a point of examining the abdomen when the patient is in a standing posture. The gastric dilatation is easily disclosed by auscultatory percussion and splashing in the stomach on manipulation; and the diagnosis can be confirmed, if necessary, by radiography of a bismuth meal. The neuroses particularly associated with visceroptosis are the anxiety states, especially the anxiety neurosis and anxiety hysteria. The condition also occurs in patients who live in a

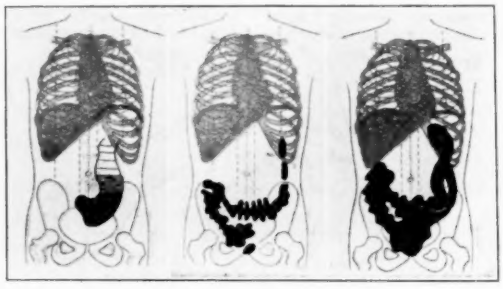
constant state of fear for some conscious reason or other, such as a brutal husband, other domestic troubles, financial anxieties, &c. The practical point is that gastric dilatation and visceroptosis are liable to occur in all cases of chronic fear, dread or anxiety, and it is the object of this article to offer an explanation of the relationship.

Fear and the Flow of Adrenalin.

It has been shown by Cannon that one of the results of fear is an increased outpouring of adrenalin into the general circulation. This substance is a stimulant to the sympathetic nervous system, and hence has the property of inhibiting peristalsis of both the stomach and intestine. Moreover, it stimulates the pylorus to contraction, thus closing the pyloric orifice. The inevitable result of this state of affairs is that the stomach is incompletely emptied between meals, the weight of a gradually increasing residue maintains a constant pull on the greater curvature, and fermentation of the gastric contents gives rise to the formation

Diagrams Showing X Ray Appearances in Visceroptosis.

1 2 3



1. Taken vertically immediately after a bismuth meal.
2. Taken on the couch 48 hours after a bismuth meal.
3. Barium enema.

of distending gas. In this way dilatation of the stomach proceeds apace in anxiety states; it is common in anxiety hysteria for the greater curvature of the stomach to reach the umbilicus and, in long-standing cases, such as that from which the accompanying diagrams were made, the stomach may eventually descend as low as the pelvis.

While the transverse colon is supported at the splenic flexure by the costo-colic ligament, it is elsewhere dependent from the transverse meso-colon which hangs from the greater curvature of the stomach; so that when the stomach dilates the transverse colon falls, dragging with it the ascending colon, which then pulls on the right kidney and dislocates it from its bed of fat, thus giving rise to the "mobile kidney." In many such cases the cæcum can be demonstrated by X rays to have descended into the true pelvis. This state of affairs gives rise to all the kinks described by Sir Arbuthnot Lane, with their dire results.[1]

Illustrative Case.

I have selected for illustration of the above points the case of a married lady, aged 44, who had suffered from indigestion for 30 years. She was born of neurotic parents, who lived an unhappy married life and had innumerable quarrels during the patient's childhood—a potent cause of neurosis. Her father was bad-tempered, and her mother always supposed herself to be dying, although she lived to 70 years of age. The patient had been liable to anxiety attacks for 20 years before I saw her, but they had been gradually becoming more and more frequent since hysterectomy for fibroids about 10 years ago. These attacks were accompanied by palpitation, tremor, sweating, indigestion, vomiting, polyuria, and "funny" feelings in the spine (lower dorsal region). She also had delusions, but a description of these might lead to her identification. She had had rest-cures, ovo-mammoid and a host of other hormone preparations, and a hundredweight of bromides, bismuth and other drugs. Incidentally her visceroptosis had escaped notice. Dr. Alfred Jordan has kindly prepared for me the diagrams here shown from his own skiagrams of the case.

Treatment.

Moderate dilatation of the stomach of this kind and the resulting visceroptosis are curable by relieving the patient's mental condition, either by improving the circumstances of life which gave rise to it, if that can be done, or by psycho-analysis; but it is doubtful whether such gross displacements as those shown in the accompanying diagrams can be completely cured by relief of the mental state or by an antidote to adrenalin. It is probable that this can only be done by a surgical operation; but the abdominal condition may be alleviated by copious saline enemata in the Trendelenburg position, combined with gastric lavage, faradism to the abdomen, administration of gastric and intestinal antiseptics, and so forth, the patient subsequently wearing a Curtis belt by way of support.

Inasmuch as visceroptosis reacts upon the nervous system and may, for example, give rise to acute confusional states via toxæmia, such treatment is to be recommended; but it falls short of treating the primary anxiety state which originated the gastric dilatation and resulting visceroptosis. This belongs to the mental sphere.

The anxiety neurosis is frequently cured by readjustment of the patient's conscious life; but anxiety hysteria cannot be cured radically except by psycho-analysis. The most difficult cases to treat medically are those in which the cause of the anxiety state is conscious. For example, no amount of psycho-analysis will relieve the anxiety of a penniless widow whose children are starving, or remove the fear of cruel treatment by a brutal husband. Such ætiological factors as these should be referred to charitable associations or to legal advisers. My point is that the most frequent cause of visceroptosis is dilatation of the stomach. Without this the colon cannot fall. Such gastric dilatation may originate from organic obstruction of the pylorus or duodenum—from malignant growths, for example; but these are rare causes of the very common malady—visceroptosis. By far the commonest cause is anxiety, normal or morbid; and this is the ætiological factor we should try to combat.

In conclusion, every doctor confronted with a case of neurosis or psychoneurosis should examine the patient for visceroptosis; and every doctor confronted with a case of visceroptosis should make inquiry respecting causes or symptoms of anxiety, fear, dread or allied emotional states.

[1] It has been pointed out that these kinks correspond fairly loosely with Sir Arthur Keith's sphincters, and it would be interesting to know whether, as seems probable, adrenalin has the property of closing these sphincters in the same way as it closes the pylorus; especially in view of the fact that kinks in a normal intestine offer little or no obstruction to the passage of its contents.

DIPHTHERIA IN BRISTOL DURING 1921.—At a meeting of the Bristol Health Committee held on Jan. 3rd diphtheria was the chief subject of discussion. The Rota Committee reported that at its meeting on Dec. 29th the general medical superintendent of the city isolation hospitals (Dr. D. S. Davies) had presented an important report on diphtheria, in which he pointed out that in 1920 12 of the nursing staff at Ham Green Hospital developed diphtheria, and one nurse died, whilst in 1921 17 members of the staff at Ham Green and Novers Hill developed the disease, but fortunately none died. Apart from the risk to life the loss in two years of the services of 29 of the hospital staff, with an average duration of six weeks' illness, amounted to 174 weeks. In an outbreak at Southmead Infirmary in January, 1921 (13 cases, 5 deaths), 4 of the nursing staff contracted diphtheria; the disease was therefore of great risk to nursing staffs; as authorised by the committee, Dr. Davies, working in conjunction with the consulting physician to the guardians, had employed the Schick method of test and protection in a Bristol school of 200 boys, in which 5 cases of diphtheria and 2 deaths had occurred. Immediate contacts were tested and protected, and no further cases were reported.

SOME POINTS IN THE EXAMINATION OF THE HEART FOR LIFE ASSURANCE.*

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IN all probability the cardio-vascular is the most important system of all with regard to life assurance, since the length of life of most individuals depends so largely upon the integrity of this system. The difficulty of the subject has been augmented by the increasing practice of accepting lives for reduced terms of years and with extra premiums, which involves the whole question of prognosis, admittedly a most difficult problem, and lying outside the scope of our consideration; the first essential for prognosis, however, is an accurate diagnosis, especially with regard to irregular action of the heart and cardiac murmurs and their significance. It is obviously impossible, in the time at my disposal, to discuss the whole subject of the examination of the heart for life assurance; I shall only attempt to deal with some of the problems which are the most common and of the greatest practical importance.

Importance and Significance of Subjective Symptoms.

The question of subjective symptoms in a person proposing for life assurance is of very great importance, for it is agreed that the essential cause of heart failure lies in the heart muscle; if this view be correct, valvular defects, arterial disease, and disturbances of the cardiac mechanism, such as auricular fibrillation, should be regarded not so much as specific affections in themselves as from the point of view of the relation which they bear to the myocardium. Take the case of a valvular lesion. First, it can be readily understood that it is a mechanical disadvantage in the work of the heart muscle. But it should also be remembered that, as a rule, there are changes, coincident with the valvular lesion, in the cardiac musculature, the coronary arteries, or the aorta. It is, therefore, important to endeavour to ascertain whether the lesion which has invaded the valve has also affected the myocardium, or blood-vessels, or both. These morbid changes in the musculature of the heart may occur as an acute condition, which later on may become chronic; or they may occur as a primary chronic condition, as a result of degenerative changes. As an example of the former may be cited an acute infection of the mitral valve by the rheumatic poison, usually followed by organisation, resulting in the formation of fibrous tissue, which tends to contract as life advances, ultimately giving rise to permanent stenosis, or incompetence, or both. It is known that in every case of acute endocarditis there is probably always present some degree of myocarditis, and that acute myocarditis may occur independently of acute endocarditis; but it is not sufficiently understood that acute myocarditis is often followed by permanent structural changes in the myocardium, which, as in the case of endocarditis, may not fully declare themselves until some years afterwards, and we should always endeavour to ascertain the degree of these permanent structural changes. As examples of primary chronic affection resulting from degenerative changes may be cited most cases of aortic incompetence which come on insidiously in males during or after middle life. As a rule there are coincident or secondary changes in the cardiac musculature, aorta, or coronary arteries. Another point of importance is whether the lesion—be it the result of a previous attack of acute endocarditis or primarily chronic due to degenerative changes—is progressive or not. Now, with regard to the investigation of involvement of the myocardium, and progression of the lesion, while the results of physical examination—such as the size of the heart—are important, the most important question of all is that of the functional efficiency of the heart. Is this impaired, and if so, to what extent, and is the degree of impairment increasing? Mackenzie has emphasised the view that the best way to answer these questions is to ascertain how the heart responds to effort; in other words, the amount of physical exertion in which the patient can indulge without experiencing symptoms of cardiac distress. Neither the examining room of a life assurance office nor the consulting room is always a temple of truth, but I would urge that some such question as "Do you experience shortness of breath, palpitation, fatigue, giddiness, faintness, præcordial discomfort or pain, or a sense of pressure or tightness across the chest during or after considerable or moderate exertion?" should be included in the examination form and put to each proposer for life assurance, that a searching inquiry should be made, and that some simple exercise test should be performed.

In conducting this inquiry, three essential facts should be borne in mind. First, the natural standard of the heart's strength varies in individuals, each individual knowing the kind and amount of exertion in which he can *normally* indulge without producing symptoms of cardiac distress, and being aware when and to what extent there is distress. Our inquiry should aim at finding out whether the normal standard of a proposer has decreased, and, if so, to what extent, and whether it is still decreasing. Secondly, symptoms of cardiac distress on exertion may be due to causes other than heart disease. Thirdly, the cardiac muscle may be merely temporarily exhausted, whether the heart is diseased or not. But, provided extrinsic and temporary causes—such as anæmia, sleeplessness, temporary physical or mental overstrain, and deficient tone due to lack of physical exercise—can be excluded, the fact and degree of a departure from the normal standard of an individual may be taken as fairly indicative of the presence and degree of myocardial disease. Further, if the symptoms of cardiac distress on exertion be increasing—in spite of an adequate period of rest and the employment of other remedial methods—and provided again that extrinsic and temporary causes can be excluded, we may be satisfied that the lesion is progressing, and its rate of progress may be inferred by the rate of increase in severity of the symptoms.

Angina pectoris is not rarely missed. While the term is usually employed to denote a paroxysmal attack of pain in the region of the heart—the paroxysmal nature of the pain being its characteristic feature—with a tendency to radiate in certain directions and being accompanied by a feeling of constriction within the chest and a sense of impending death, it should be remembered that this description is that of a typical and severe attack, and there are many grades and modified forms of this affection. For example, there may be on physical exertion or emotion only a little discomfort or pain felt over the sternum, perhaps radiating to the arm and neck, and accompanied by a feeling of uneasiness and distress, which may at first disappear as soon as the exciting cause ceases, but at a later stage may continue for some time after its cessation. The pain of angina pectoris is almost always over the sternum. Less frequently it is on one side of the chest or the other, usually on the left side. I have seen a number of cases in which the pain was strictly limited to the epigastrium, and some had been diagnosed as cases of dyspepsia, because the patient had told his medical practitioner that the pain occurred after food; but, on further inquiry, it was found that pain after food occurred only when physical exertion was indulged in. The pain may also begin in the left arm, or the jaw, or the left pectoral muscle, or the left leg. Its occurrence at first during or after exertion is a fact of fundamental importance for diagnosis.

Lastly, with regard to subjective symptoms, it is necessary to distinguish between those due to septic infection—as, for example, from the teeth, the tonsils, or the bowel—and those due to organic heart disease. In the former, the most prominent symptom

* The substance of a paper read at a meeting of the Life Assurance Medical Officers' Association on Jan. 4th, 1922.

is a sense of marked exhaustion after effort. There is frequently a sense of great depression, often accompanied by irritability of temper; of giddiness and faintness, which may disappear on lying down, and vaso-motor instability in varying forms is often a marked feature; and when palpitation and præcordial discomfort or pain are complained of, they very frequently have no relation to exertion. In the case of subjective symptoms due to organic heart disease, on the other hand, the nervous and vaso-motor symptoms are little, if at all, in evidence; the earliest subjective symptoms are primarily cardiac, of which breathlessness, palpitation, and præcordial discomfort or pain are the most prominent, usually arising as a result of effort.

We will now consider some of the results to be obtained by physical and instrumental examination, beginning with the arterial pulse.

Pulse-rate.

May I suggest that the pulse should always be taken both at the beginning and at the end of the medical examination. May I also emphasise the importance of bearing in mind the fact that the rate of the radial pulse does not necessarily represent the ventricular rate, for not infrequently in irregular action of the heart many beats are so feeble that the pulse-waves do not reach the wrist; the ventricular rate, should, therefore, be counted at the apex, either by palpation or auscultation, preferably the latter. While the normal rate of the heart is about 72 per minute, it varies considerably in perfectly healthy individuals; in some it is always above this average, and has been known, although very rarely, to average 120 per minute, whereas in others it is always correspondingly infrequent. It is difficult, therefore, to decide when an increase of the cardiac rate in an individual is pathological. In this connexion a record of the past history is of value. Among the causes of the pathological form of tachycardia, other than the various forms of heart disease, I would mention the excessive use of alcohol, tobacco, tea, and coffee, septic absorption from the teeth, the tonsils, or bowel, and pulmonary tuberculosis. The increase in the rate of the pulse when an individual assumes the upright posture after lying down is normally not more than 20 per minute at most. Anything above this rate especially suggests vaso-motor instability. The increase in the rate of the pulse induced by physical exertion varies in healthy individuals. It is, therefore, difficult here also to determine whether an increase in rate is pathological; in this connexion the presence or absence of accompanying subjective symptoms of cardiac distress is of fundamental importance. The time which may elapse before the pulse-rate returns to the normal after exertion is of greater diagnostic significance.

When a history is elicited of a marked increase in the cardiac rate or attacks of palpitation, occurring suddenly and without apparent cause, or of dyspnœa on exertion and other indications of cardiac failure coming on rapidly we should consider the possibility of paroxysmal tachycardia. By paroxysmal tachycardia I mean a condition in which a marked acceleration of the cardiac rate occurs, which commences suddenly and abruptly and without apparent cause, lasts for a varying period, ceases suddenly and abruptly, and is due to an abnormal rhythm—the stimulus for cardiac contraction, instead of arising at the junction of the great veins with the auricle, having its origin at an abnormal point. The return of the cardiac rate to what it was prior to the paroxysm is due to the reversion of the cardiac rhythm to normal. From the definition given, it will be seen that paroxysmal tachycardia does not include acceleration of the cardiac rate associated with the normal or sinus rhythm. Polygraphic or electro-cardiographic examination will put the diagnosis beyond all doubt, but frequently neither of these is available, and we have to trust to other methods of investigation. The most important points from the diagnostic point of view are: (1) The commencement and termination of the attack of tachycardia. The suddenness and abruptness of the onset and termination of the tachycardia is a characteristic feature—the maximum rate is attained within a few seconds, and the return of the cardiac rate to what it was prior to the attack takes place equally quickly, whereas, in tachycardia associated with a normal rhythm, the onset and termination are gradual. (2) The cardiac rate. A persistent rate of over 160 is almost invariably due to an abnormal rhythm, and a persistent rate of over 140 may be due to the same cause. (3) The cardiac rate is not influenced by change of posture or other forms of physical exertion, as is the case in tachycardia not associated with an abnormal rhythm. The term bradycardia may be used in two different senses: either it may be restricted to infrequent action of the heart as a whole, the auricular rate being diminished pari passu with that of the ventricles; or it may be employed to denote infrequency of the pulse-rate at the wrist, including that due to extra-systole, partial or complete auriculo-ventricular block, or even auricular fibrillation or auricular flutter, and the importance of this latter group of cases as causes of infrequency of the ventricular rate

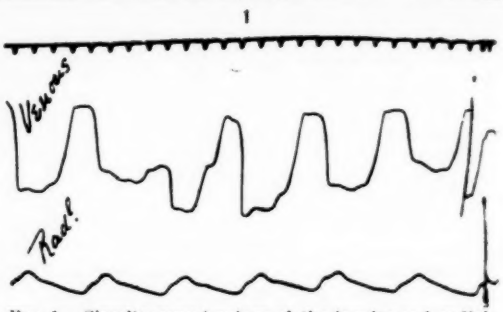

FIG. 1.—Simultaneous tracings of the jugular and radial pulses, from a case of aortic stenosis.

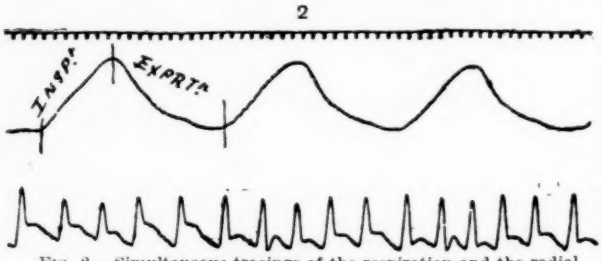

FIG. 2.—Simultaneous tracings of the respiration and the radial pulse, from a healthy boy, aged 14, showing sinus irregularity.

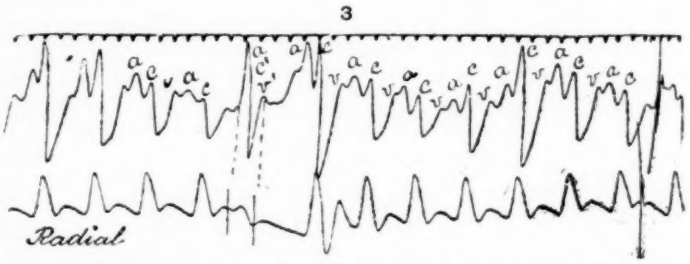

FIG. 3.—Simultaneous tracings of the jugular and radial pulses, showing an extra-systole. The extra-systole is synchronous with the systole of the auricle (*a c'*).

should be noted. I employ the term in the former sense. Using the term in this sense, bradycardia may be physiological, especially in males; in some perfectly healthy individuals the normal pulse is always infrequent, a pulse-rate of 50 not being very uncommon, and, indeed, cases have been recorded of a pulse-rate of 40 in a healthy individual. A pulse-rate of between 50 and 60 is comparatively common among athletes who are in training. Among the diseases in which the pathological form of bradycardia is met with are aortic stenosis, fatty degeneration of the myocardium, during the convalescence of acute infectious diseases, especially influenza, and jaundice.

Character of Pulse-Wave.

With regard to the character of the pulse-wave, I need not draw attention to the diagnostic value of the "collapsing," "water-hammer," or Corrigan's pulse, except to say that the collapsing character may be intensified by raising the arm above the head, which method of examination should always be employed in suspected aortic regurgitation. Valuable help may be obtained from the character of the pulse-wave in aortic stenosis and in mitral stenosis. The characteristic features are generally to be observed by careful

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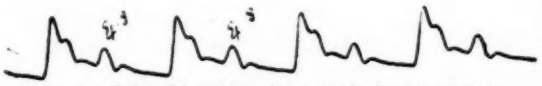

FIG. 5.—Pulsus bigeminus, due to a single extra-systole with its succeeding compensatory pause occurring regularly after each normal beat.

palpation of the pulse, and, of course, always by the use of the sphygmograph. In aortic stenosis the pulse is sometimes very characteristic, being infrequent, of smaller amplitude, exhibiting an oblique percussion wave, and a gradual and slow summit, while to the finger the pulse is full between the beats (Fig. 1). Usually the pulse in mitral stenosis is small, the upstroke being short and soon attaining its maximum, the pulse-wave is long, dicrotism is absent, and the pulse is full between the beats—in contrast with cardiac dilatation.

Irregularity of the Pulse.

Irregular action of the heart in persons who may or may not exhibit evidence of organic disease is a subject of the utmost importance in the examination of the heart for life assurance. It is a problem which has been admittedly a source of perplexity and difficulty to the clinician. It was known that cardiac irregularity might signify serious impairment or disease of the heart on the one hand, or that it might be of little or no importance; for it was found that some cases lived to the normal span of life without symptoms of cardiac failure, while others died after a lapse of only a few years. The difficulty was that until recently it was impossible to determine the significance of the irregularity in any given case. All this is now changed. The problem has for the most part been solved; it is now possible to classify the vast majority of cases of cardiac irregularity, and it is known what each type signifies. I would respectfully emphasise the fact that it is not sufficient to have a question on the examination form or to determine at the time of examination merely whether the pulse is regular or irregular. It is necessary to determine the *type* of irregularity, and we should be acquainted with the significance of each type.

All cases of cardiac irregularity, apart from comparatively rare exceptions, fall into one of six groups: (1) What is called sinus irregularity, a common type; (2) irregularity due to extra-systole, likewise common; (3) irregularity due to depressed conductivity—in other words, partial and complete heart-block; (4) irregularity due to the pulsus alternans; (5) irregularity associated with auricular fibrillation, which accounts for approximately 50 per cent. of all cases of persistent

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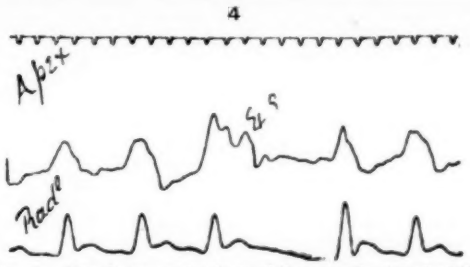

FIG. 4.—Simultaneous tracings of the apex-beat and of the radial pulse, showing intermission of the pulse, due to a ventricular extra-systole failing to send a wave to the wrist.

irregularity of the heart; and (6) irregularity associated with auricular flutter.

The great advance in our knowledge of irregular action of the heart has been almost entirely due to the introduction of the clinical polygraph and the electrocardiograph. But while most of our knowledge is the result of investigations conducted by means of these instruments, for practical purposes their use is now unnecessary in the great majority of cases of irregular action of the heart, all that is required being skilled employment of the ordinary methods of examination, particularly auscultation, and in a still larger proportion of cases—indeed, in the vast majority—the use of a Dudgeon's sphygmograph. In this connexion may I commend the advantage of auscultation at the apex over other methods of physical examination in endeavouring to determine the rhythm of the cardiac action.

Sinus Irregularity.

In sinus irregularity the stimulus for contraction arises at the normal site—namely, at the junction of the veins with the auricles, but the rhythm of the sinus is not regular. There is a variation in the length of the diastolic period of the cardiac cycle, the systolic period remaining constant. On auscultation, therefore, the interval between the first and second sounds is found to be constant, while the varying length of the diastolic interval can be detected. If a tracing of the radial artery be taken, while the intervals between the beats are found to vary, the actual variations may not be numerous, and the pulse-beats are of equal or nearly equal size (Fig. 2). There is usually a definite

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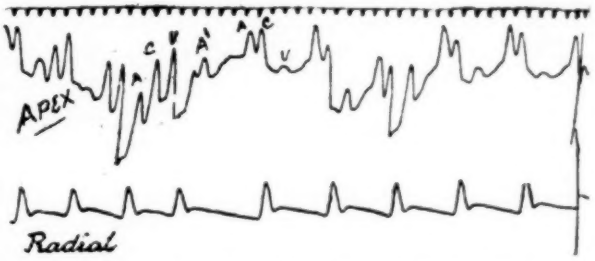

FIG. 6.—Simultaneous tracings of the apex-beat and of the radial artery, showing intermission of the pulse, due to partial heart-block, the ventricle failing to respond to the stimulus of the auricle at A'.

relationship to respiration. When irregularity of the cardiac action is found to be definitely related to respiration, it is in all probability of the sinus type. There is no reason to suppose that sinus irregularity is indicative of an impaired heart, or that it adds to the gravity of any diseased cardiac condition which may be present. The condition may therefore be totally disregarded in an examination for life assurance.

The Extra-Systole.

By extra-systole is meant the premature contraction of the auricle (auricular extra-systole), or of

the ventricle (ventricular extra-systole), or of both chambers together (nodal extra-systole), while the fundamental or sinus rhythm is otherwise maintained in most cases. Extra-systoles may appear at long or at frequent irregular intervals, or regularly after each beat, or after every second, third, or more normal beats. In most cases the pause which follows the premature contraction is abnormally long, being called the compensatory pause, and the pulse-beat often has a greater amplitude when immediately following a compensatory pause than on other occasions (Fig. 3).

On auscultation, in the vast majority of cases, two heart sounds are synchronous with each extra-systole. Sometimes, however, the extra-systole occurs early in diastole, and before the cardiac muscle has had sufficient time to recover fully from the preceding systole, in which event the premature contraction is so feeble as to fail to open the aortic valves and only the first sound is heard. An extra-systole may be so feeble that no wave is felt at the wrist, so that there is simply an abnormally long pause, resulting in what is called a "dropped beat" or an "intermittent" pulse (Fig. 4). By far the most common cause of an *intermittent pulse* is an extra-systole which fails to reach the wrist. If a single extra-systole with its succeeding compensatory pause occur regularly after each normal beat, then the beats at the cardiac apex occur in pairs, as also do the pulse-beats (Fig. 5), the condition being called pulsus bigeminus. If a single extra-systole with its succeeding compensatory pause occur after every two normal beats, then the apex-beat occurs in threes, as also do the pulse-beats, the condition being known as pulsus trigeminus; but if the premature contraction is so feeble that no wave reaches the wrist, the pulse-beats are paired (pulsus bigeminus). If an extra-systole occurs regularly after each normal beat and the extra-systole fails to reach the wrist on each occasion, the rate of the arterial pulse is halved. The next most common cause of an intermittent pulse is partial heart-block (Fig. 6). Pulsus bigeminus (Fig. 7), pulsus trigeminus, and halving of the pulse-rate may also be caused by partial heart-block. A correct diagnosis of extra-systoles can generally be made simply by palpation and auscultation, especially the latter. The differential diagnosis between intermission of the pulse, pulsus bigeminus, pulsus trigeminus, and halving of the pulse-rate, due on the one hand to extra-systoles and on the other to partial heart-block, can, as a rule, be made readily by means of palpation and auscultation. In the former case a premature beat can be detected at the apex-beat, and on auscultation one or two heart sounds will, in the great majority of cases, be audible during the early part of the pause, because the ventricle has contracted; whereas, in the case of partial heart-block there will be absence of an apex-thrust and of heart sounds during the pause, because the ventricle has failed to contract.

Extra-systoles indicate that some portion of the heart below the sinus is more excitable that the sinus.

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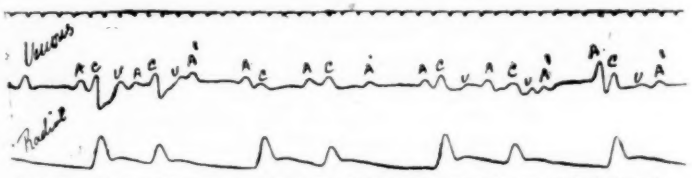

FIG. 7.—Pulsus bigeminus, due to partial heart-block, the ventricle failing to respond to the stimulus from the auricle at A'.

In 1911 I wrote that when extra-systoles are considered by themselves—that is, without reference to the conditions with which they may be associated—there is so far no evidence for supposing that they are either indicative of an impaired heart or that they add to the gravity of any existing morbid condition. Futher experience has not led me to change that opinion; for purposes of life assurance I should base my opinion entirely upon the associated conditions and take no notice of their presence alone.

Depressed Conductivity; Partial and Complete Heart-Block.

There are three degrees of depressed conductivity: (1) There is merely a prolongation of the interval which separates the commencement of contraction of the auricle and that of the ventricle, each stimulus of the auricle reaching the ventricle which duly responds; (2) the stimulus does not always reach the ventricle—in other words, the ventricle does not always respond to the stimulus from the auricle; and (3) no impulses reach the ventricle from the auricle, so that the auricles and ventricles beat independently of each other. The first two degrees are called "partial heart-block" and the third is called "complete heart-block."

The first grade of heart-block may give rise to irregularity of the pulse, on account of variations in the length of the intervals between the contractions of the auricles and of the ventricles. In my opinion this grade can only be recognised by means of the polygraph or the electrocardiograph. The second degree of heart-block may give rise to dropped beats, pulsus bigeminus, pulsus trigeminus, and halving of the ventricular rate. The differential diagnosis from extra-systoles has already been dealt with. The higher grades of heart-block give rise to infrequency of the pulse-rate. When the ventricular rate suddenly falls to half, in all probability the case is one of 2 : 1 heart-block. In complete heart-block the pulse-rate is slow, not infrequently being between 20 and 30 beats per minute, and usually not more than 36, though some cases have been recorded in which the rate has been considerably higher—even up to 60 beats per minute. It is sometimes difficult to distinguish between partial and complete heart-block without the aid of the polygraph or electrocardiograph. Most cases with a ventricular rate of 36 or under, however, are cases of complete heart-block. Also the presence of more rapid pulsations in the jugular veins than the rate of the radial pulse, and the presence of small waves occurring at regular intervals

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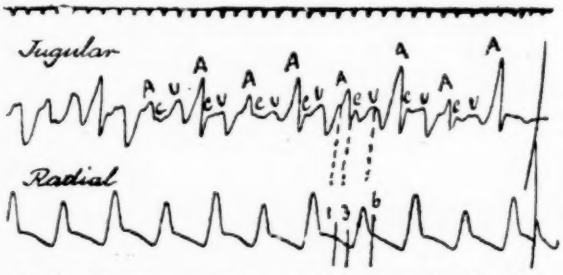

FIG. 8.—Simultaneous tracings of the jugular and radial pulses, showing continuous pulsus alternans.

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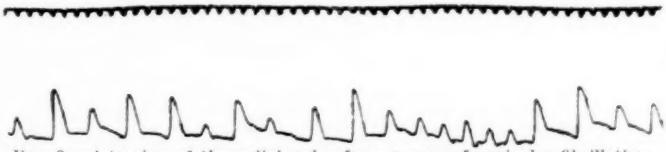

FIG. 9.—A tracing of the radial pulse, from a case of auricular fibrillation, showing complete irregularity of the pulse.

on the descending limb of a sphygmogram afford help in differential diagnosis. Persistent heart-block of mild degree is indicative of myocardial damage.

Pulsus Alternans.

By pulsus alternans is meant a condition of the pulse in which, while the rhythm is perfectly regular, a large beat and a small beat alternate (Fig. 8). In the vast majority of cases it is necessary to take a tracing of the radial artery in order to recognise the condition. When pulsus alternans occurs in association with the normal rhythm, it is an indication of extreme exhaustion of the heart muscle. When the condition is associated with an abnormal rhythm, such as auricular flutter, it does not appear to have any serious significance in itself.

Auricular Fibrillation.

It is of the utmost practical importance with regard to the examination for life assurance that auricular fibrillation should be recognised. It accounts for approximately 50 per cent. of all cases of persistent irregularity of the heart. When auricular fibrillation has once set in, in the great majority of cases it persists for the remainder of life. It results in an irregular, and, in the vast majority of cases, a much too frequent pulse. The ventricular rate should in every case be counted at the apex, either by palpation or auscultation, preferably the latter, for many beats of the heart may not be transmitted to the wrist. The irregularity presents the following features, which are of profound importance for diagnosis: (1) It is always continuous, and in the great majority of cases persists for the rest of the patient's life. (2) It is also complete—i.e., an irregularly irregular pulse (Fig. 9). Two pulse-beats of the same size rarely follow each other. There is often no relation between the length of a pause and the strength of the beat which follows it; a short pause may be followed by a strong beat, and a long pause by a weak beat. This type of irregularity can usually be differentiated from the other types by palpation of the radial pulse and of the apex-beat, and still better by auscultation at the apex. When the ventricular rate is slow, or very rapid, it may be necessary to take a sphygmogram and to adopt careful measurements. A diagnosis of auricular fibrillation may be made by means of the clinical polygraph or by the electro-cardiograph. But we may be reasonably certain of its existence from the mere presence of complete irregularity of the pulse.

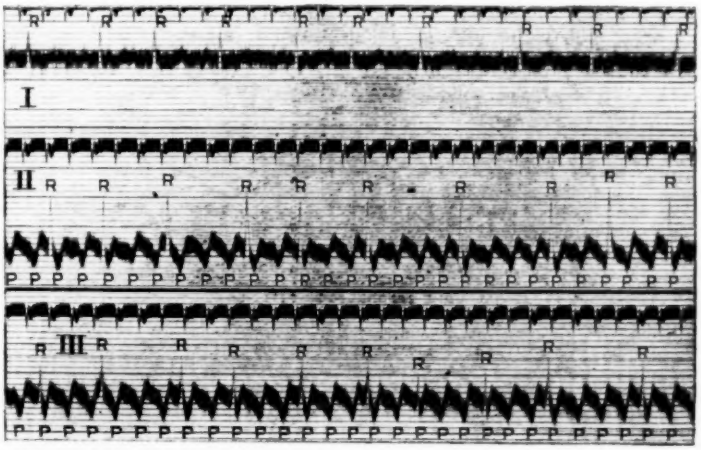

FIG. 10.—Electrocardiogram, from a case of auricular flutter. The auriculo-ventricular rate is sometimes 2 : 1, at others 3 : 1, and at others again 4 : 1. The response of the ventricle to auricular contraction being at irregular intervals, there is irregularity of the ventricular rhythm.

Auricular Flutter.

In most cases of auricular flutter there is a constant and uniform ratio between the auricular and ventricular rate, so that the rhythm of the arterial pulse is regular. When, as not infrequently happens, the response of the ventricle to auricular contractions is at irregular intervals there is irregularity of the pulse rhythm, it may be even markedly so (Fig. 10). In some of these cases the sphygmogram may resemble that of a case from auricular fibrillation; but if a sphygmogram from a case of auricular flutter be carefully studied it will be found that even although the ventricular rhythm is markedly irregular, the pulse beats measure out into groups of equal length, which is never the case in auricular fibrillation. In some cases a correct diagnosis cannot be made with certainty even though the polygraph be employed, an electro-cardiographic examination being necessary.

Some Points in Inspection, Palpation, Percussion, and Auscultation.

We should be on the look-out for extrinsic causes of displacement of the apex-beat and of an increase in its extent. It is also important to remember that the force of the apex-beat may be increased by causes other than cardiac hypertrophy—as, for example, in cases in which the chest-wall is thin, in retraction of the left lung, when the cardiac action is excited (e.g., during and immediately following muscular exertion or mental excitement), and in irritable heart. In cardiac hypertrophy the apex-beat is slower and longer than normal, and this sign is the most characteristic feature of hypertrophy. Among other causes of cardiac hypertrophy is an excessive amount of muscular effort, as in athletes and in labourers, in which case it seems clearly established that the hypertrophy may disappear when the cause no longer exists, unless long continued, when it is apt to be followed by dilatation. Diminution or disappearance of the apex-beat is, of course, not necessarily indicative of cardiac disease. In mitral stenosis the apex-beat is sometimes in the form of a peculiar sudden tap communicated to the fingers, which is very characteristic. Indrawing of the apex-beat, and systolic recession in the intercostal spaces on either side of the sternum, or in the epigastrium, or even of the lateral or posterior walls of the left side of the chest, do not necessarily indicate the existence of chronic adhesive pericarditis. A positive diagnosis of this disease should not be made from the presence of one sign only, except when diastolic rebound or shock exists after systolic retraction, and perhaps also where systolic recession of the sternum itself exists. An apical presystolic or diastolic thrill, indicative of mitral stenosis, must be carefully distinguished from mere vibration of the chest-wall which may be occasioned by a forcibly acting heart when the ribs are rigid; in the latter case, by separating the fingers and placing them in the intercostal spaces the osseous vibrations are not felt. I would especially emphasise the great importance of accurate percussion of the left border of deep cardiac impairment in cases where the apex-beat is faint or absent: I have seen many cases in which enlargement of the heart associated with myocardial degeneration was not detected because of an omission in this respect. A combination of the existence of subjective symptoms during or after physical exertion, evidence of enlargement of the heart, and absence of physical signs indicative of a valvular lesion are of the utmost importance in the diagnosis of myocardial disease.

In pure mitral stenosis the first sound is altered in a characteristic manner; it becomes short, sharp, and

clear, like a sudden snap; it may resemble the second sound so closely as to be mistaken for it. In fusiform dilatation of the aorta beyond the ring, the second sound in the aortic area is sometimes not only accentuated, but resembles the sound produced when a cork is drawn from an empty bottle. The second sound in the aortic area may be diminished and even practically absent in true aortic stenosis. These auscultatory phenomena are of considerable diagnostic value.

Interpretation and Significance of Murmurs.

During recent years much has been written and a good deal of controversy has arisen regarding the significance of murmurs. Without entering this field of controversy, I may remark that a good deal of misunderstanding seems to have arisen because the same terms are employed in different senses by various writers. Thus, some use the term "physiological," as applied to murmurs, as synonymous with the term "functional" employed by others. They are not synonymous. For, while "functional" murmurs may include what are called "physiological" murmurs by some writers, a murmur may be "functional" but not "physiological," as, for example, *relative* incompetence of the mitral valve from dilatation of the left ventricle. With functional or inorganic murmurs, the valves themselves are healthy, in contrast with organic murmurs, in which the valves are involved. Functional murmurs are of frequent occurrence, and in every case in which a murmur over the præcordium is audible, the question whether the murmur is functional or organic should be most carefully considered. Functional murmurs include, among others, (1) bruits due to anæmia, (2) bruits due to *relative* incompetence of one of the valves, (3) cardio-pulmonary murmurs, and (4) murmurs which may be present when there is excitation of the cardiac action, as, for example, in Graves's disease. *Relative* incompetence may be due to: (*a*) dilatation of the cavity of the ventricle; (*b*) enlargement of the orifice on account of relaxation of the surrounding muscular structures; (*c*) enlargement of the ventricular cavity and dilatation of the orifice combined; and (*d*) shrinkage or stretching of the musculi papillares or chordæ tendineæ, as a result of disease. The condition is more common on the right than on the left side of the heart, and is almost unknown in aortic disease, being not nearly so frequent as in the case of the mitral valve. Cardio-pulmonary murmurs are murmurs produced outside the heart.

In investigating a murmur with regard to life assurance, the following points should be carefully noted: (1) The time of its occurrence; (2) the point of maximum intensity; (3) the direction of selective propagation—by which is meant that instead of murmurs being audible equally well at all points of the chest wall from their points of maximum intensity they are better heard at a distance in some directions than in others; and (4) its character. In every case the proposer should be examined in the standing posture and lying down, before and after gentle exercise, and during the various phases of respiration. May I at the outset point out that if a murmur is audible over more than one valvular area, it must not be inferred that more than one valve is necessarily affected. In order to be assured that this is the case, we must satisfy ourselves that there is either an increase in the intensity or an alteration in the character of the murmur as the second area is approached; in other words, when more than one valve is affected murmurs have separate points of maximum intensity.

Functional murmurs as a group present certain characteristics. They are almost invariably systolic in time, are often of short duration, and tend merely to accompany and not replace the cardiac sound. The point of maximum intensity is much more frequently in the pulmonary area, or rather below or external to it. While functional murmurs tend to be audible over the greater part, or even the whole, of the præcordium, their area of conduction outside the præcordium is limited and their direction of selective propagation frequently does not coincide with that of organic murmurs. Usually soft and blowing, they are occasionally loud and rough in character, the loudness not infrequently showing considerable variation from time to time. They are louder after exertion—indeed, they may only then be audible and vary with changes of posture, being usually louder when the individual lies down, and feebler or even absent in the sitting or standing posture. Hæmic murmurs are always systolic in time, and are most frequently heard in the pulmonary area, then in the mitral, tricuspid, and aortic areas, in the order of frequency named, the last being comparatively rare. Cardio-pulmonary murmurs are not absolutely synchronous with the beginning of systole or diastole and may precede or follow either; the point of maximum intensity does not coincide with any of the valvular areas, the murmurs being usually heard best over the margins of the lungs; and they vary with the phases of respiration.

If I were asked what significance I attach, from the point of view of life assurance, to the presence of a systolic murmur audible over the præcordium, I should reply that it entirely depends upon whether the murmur is organic or functional, and, if functional, in which group it should be placed.

Some Points in Diagnosis of Various Forms of Chronic Valvular Disease.

In conclusion, I should like to deal with some points regarding the diagnosis of the various forms of valvular disease. It is not sufficiently appreciated that a diagnosis of aortic stenosis is not justifiable from the mere presence of a systolic murmur over the aortic area, additional evidence being required, as the murmur may be due to other causes, among which are bruits due to anæmia, cardio-pulmonary murmurs, pulmonary stenosis, patent ductus arteriosus, pressure upon the aorta by a mediastinal tumour where no definite pulsation is present, mere roughening or stiffness of the aortic cusps or orifice, fusiform dilatation of the aorta just above the valve—what is called "relative stenosis"—and aneurysmal dilatation of the ascending aorta. A diagnosis of aortic stenosis can readily be made when the following features are noted: Characteristic pulse already described, displacement chiefly downwards and slightly outwards of the apex-beat, gradual slow rise of the apex-thrust—a "slow heave," which is sustained—an aortic systolic thrill and murmur, with the direction of selective propagation upwards along the vessels of the neck, and a diminished or absent sound. These features combined distinguish the condition from others that may give rise to a systolic bruit with its point of maximum intensity over the aortic area; when, however, only one or a few of these characteristic features are present, difficulty with regard to diagnosis may easily arise.

In the great majority of cases there is little or no difficulty in recognising aortic incompetence. The characteristic radial pulse, the high pulse-pressure, the greatly exaggerated pulsation of the arteries, the physical signs of hypertrophy of the left ventricle, the characteristic murmur, capillary pulsation, and, rarely, visible pulsation in the superficial veins, present a definite clinical picture of which there should be no mistake. It should be remembered, however, that the phenomenon of the capillary pulse and pulsation of the superficial veins are occasionally also seen in other conditions. The murmur of Duroziez is pathognomonic of the lesion. While the point of maximum intensity of an aortic diastolic bruit is typically over the inner end of the second right intercostal cartilage, it is frequently in the second left space, or immediately over the sternum, or, more rarely, at a lower level than this, approaching even the level of the apex-beat, and in my experience more often nearer the left than the right border of the sternum.

As far as my experience is concerned, more mistakes are made with regard to the diagnosis of mitral stenosis than any other valvular lesion. The lesion is often unrecognised, as the locality of the characteristic apical presystolic murmur is not infrequently very limited, and the area may not be larger than one inch

in diameter, while on the other hand a mere reduplication of the first sound is sometimes mistaken for mitral stenosis. In the presence of the characteristic pulse, of an apical presystolic "purring," or an apical diastolic thrill, of evidence of hypertrophy of the right ventricle, of an apical presystolic murmur—which is almost invariably rough, but is of greater value in diagnosis if harsh and vibratory in character—or an apical diastolic murmur, of a short, sharp, and clear first sound, and of a reduplicated second sound, the diagnosis is easy. The thrill is almost pathognomonic. Some writers believe that a similar thrill may be present in aortic incompetence, and, therefore, that this affection should always be first excluded. The thrill must be distinguished from a mere vibration of the chest-wall, which may be occasioned by a forcibly acting heart when the ribs are rigid. The murmur is sometimes not detected, on account of the very limited area over which it is audible; or in some cases there is from time to time a complete absence of a thrill and murmur. In the latter case, we are justified in inferring that in all probability mitral stenosis is present from the character of the pulse and first sound, together with evidence of hypertrophy of the right ventricle, and accentuation or reduplication of the second sound.

Some writers are of opinion that a rumbling presystolic bruit is sometimes heard in the case of adherent pericardium in children. Even if this be so, the bruit is not rough and vibratory in character, neither does it terminate abruptly at the first sound, nor is the first sound modified in the way already described, and, further, there are usually definite physical signs of adherent pericardium.

Mitral stenosis is sometimes unrecognised in cases in which there is associated incompetence; the presystolic murmur, instead of ending in the first sound, ends in a systolic murmur, and a diagnosis of a long systolic murmur is erroneously made. There is, however, a difference in character between the former and the latter parts of this continuous bruit, the earlier portion being rough and vibratory in character, and the latter blowing or musical. Further, we can observe the position in the cardiac cycle of the two parts of this continuous murmur by placing the fingers upon the apex-beat or over the carotid artery. When the second sound at the apex has disappeared, the presystolic murmur may be mistaken for a systolic murmur, and the modified first sound for the second sound. In this event a differential diagnosis can be made from the difference in character of the two murmurs, from the fact that a presystolic murmur ends, while a systolic murmur begins, with an accent, and by timing the murmur in the manner already indicated. When, in addition to the absence of the second sound at the apex, there is also no bruit present, mitral stenosis may not be diagnosed and a diagnosis of dilatation of the left ventricle made; in dilatation, however, a second sound is audible.

With regard to the diagnosis of mitral regurgitation, it is necessary to point out that a systolic bruit audible over the apex of the heart is not infrequently erroneously interpreted as indicative of organic disease of the mitral valve, when in reality the murmur is functional. In order to say that a mitral systolic murmur is indicative of organic mitral incompetence, we must satisfy ourselves that certain other physical signs are present. With this object in view, it is advisable to note: (1) The position and character of the apex-beat; (2) the area and propagation of the murmur; and (3) the existence or absence of accentuation of the pulmonary second sound. In the case of a mitral systolic murmur due to organic valvular disease, owing to the presence of hypertrophy of the left ventricle, the apex-beat is usually displaced downwards as well as outwards. When the degree of valvular disease is so slight that no definite downward displacement of the apex-beat is present, its force is almost invariably increased, whereas, in functional conditions it is apt to be less forcible than normal. If the murmur be propagated towards the angle of the scapula beyond the mid-axillary line, we may be practically certain that it denotes the existence of organic disease. A definite accentuation of the pulmonary second sound, provided there is no condition of the lungs to account for it, favours the view that we are dealing with organic disease. The diagnosis is further strengthened by evidence of the existence of mitral stenosis. The diagnosis of relative mitral incompetence due to chronic Bright's disease or to aortic disease from organic mitral incompetence is particularly difficult, since chronic nephritis and aortic disease in themselves give rise to hypertrophy of the left ventricle. In these cases the history of the case is of importance. In addition to the points of differential diagnosis just enumerated, murmurs due to anæmia and cardio-pulmonary murmurs have other distinguishing features already referred to.

Pulmonary stenosis is usually congenital and it is not my intention to deal with the diagnosis of congenital heart disease. All I would do is to point out that, of course, a diagnosis of pulmonary stenosis should not be made from the mere presence of a systolic murmur having its point of maximum intensity in the pulmonary area, as the murmur may be due to other causes. The diagnosis of pulmonary incompetence is frequently a matter of considerable difficulty. The lesion with which it is most likely to be confounded is aortic incompetence, because the point of maximum intensity of the murmur of the latter is not infrequently to the left of the sternum. In by no means an inconsiderable proportion of tricuspid stenosis the lesion is entirely overlooked, no doubt on account of the absence of any murmur. A diagnosis of tricuspid incompetence may undoubtedly be made when after being emptied from below by means of the finger the jugular vein rapidly fills from below, and when pulsation of the liver occurring synchronously with the apex-beat, evidence of enlargement of the right side of the heart, a soft blowing systolic murmur having its point of maximum intensity in the tricuspid area, and diminution of the pulmonary second sound, are present. In marked tricuspid incompetence the murmur may be absent, in which case a positive diagnosis can be made when the first three signs mentioned are present; most writers, indeed, agree that the first sign is sufficient for a diagnosis. In slight cases a systolic murmur audible in the tricuspid area may be the only existing physical sign; but we should make certain the murmur is not propagated from any other area.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—A meeting of the General Council of this Fund was held on Jan. 4th at 7, Walbrook, London, E.C. Viscount Burnham presided, and those present included Lord Somerleyton and Sir Alan Anderson (hon. secretaries), Lord Marshall, Sir J. Kingston Fowler, Mr. John G. Griffiths, Prof. Winifred Cullis, Mr. Leonard L. Cohen, Mr. Henry L. Hopkinson, and Mr. Kenneth Prescott. The order of appointment, signed by the President's Powers Committee, of the members of the General Council, members of committees, and officers, for the year 1922, was read. The resolutions providing for the work of the Fund for 1922, which were approved at the meeting of the President and General Council held at St. James's Palace on Dec. 14th, 1921, were formally adopted.

MEDICAL SERVICES AT YORK.—The joint committee of the Health and Education Committees appointed to submit a report to the York City Council on the medical services of the city has framed several recommendations for the consideration of the council at its next meeting. The committee considers that the whole or part of the services of certain officers might be dispensed with by appointing an additional doctor to assist Dr. E. Galbraith in school work under his direction, to supervise the health visitors and midwives and other maternity and child welfare work, and to perform duties in the tuberculosis department. The joint subcommittee finally recommended to its respective committees that an additional female medical officer be appointed to enable the part-time services of certain officers to be dispensed with and to meet the requirements of the Government departments. The total cost of the medical services is £6250 per year, in addition to £1610 for the medical officers at the city asylum.

HÆMOSALPINX AND PYOSALPINX WITH TORSION OF RIGHT FALLOPIAN TUBE.

BY W. GIFFORD NASH, F.R.C.S. ENG.,
SURGEON TO THE BEDFORD COUNTY HOSPITAL.

THE interest of this case lies in the torsion of a tube already the seat of pyosalpinx, and in the resemblance of the symptoms to appendicitis. It illustrates the need of investigating the condition of the pelvic organs when there is insufficient evidence of disease in the appendix.

L. W., a single girl, aged 18, was admitted to the Bedford County Hospital on Dec. 5th, 1919, complaining of acute pain in the right lower abdomen. On Nov. 30th she had been seized with acute pain in the right lower abdomen and vomited; she was seen by a doctor, who sent her to hospital as a case of appendicitis.

Previous history.—She had an acute pain in the same spot a month previously. From the age of 13 she suffered from leucorrhœa. In 1917 she had an acute attack of abdominal pain which lasted 15 hours. Menstruation

The Fallopian tubes removed at operation: left tube above, right tube below.

commenced at 16 and at first was irregular, occurring four times in the year; after the age of 17 the periods were regular and the loss excessive.

On admission.—Temperature 99·4° F., pulse 112, tongue coated; tenderness in right iliac fossa.

Operation.—The appendix was removed through McBurney's incision and appeared normal. A lump being felt in the pelvis, an incision was then made in the middle line. The right Fallopian tube was much enlarged and purple in colour, due to its being twisted through five half turns; the left tube was enlarged and adherent to the floor of the pelvis. The tubes were removed. The uterus was very small. The patient made a good recovery.

The specimens removed were sent to the Royal College of Surgeons Museum, and Mr. S. G. Shattock, F.R.S., reported that both tubes were the seat of pyosalpinx, and that the wall of the twisted right tube was intensely congested and lined with blood clot. The girl denied having run the risk of contracting gonorrhœa.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held at 11, Chandos-street, London, W., on Jan. 17th, at 8.30 P.M., when a paper will be read by Prof. Harvey Littlejohn on the Proof of Live Birth in Criminal Cases.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 4th, Mr. RAYMOND JOHNSON, the President, being in the chair.

Mr. J. P. LOCKHART-MUMMERY opened a discussion on

POST-OPERATIVE EMBOLISM AND INFARCTION.

He said that deaths from embolism were probably the worst tragedies of surgical practice at the present time. Not only were we unable to prevent them, but their number appeared to be on the increase, in spite of undoubted improvements in surgical technique and in the after-care of patients. J. B. Wilson[1] had published a list of cases collected from the Mayo Clinic during the period 1899–1911. 63,573 major operations gave 47 fatal cases from this cause, of which 10 followed operations on the uterus and its appendages, and 9 followed operations on the gall-bladder. The embolus was pulmonary in 36 cases, cerebral in 10, and coronary in 1; 19 occurred in the first week following operation, and 21 in the second week. Mr. Lockhart-Mummery said that since, in his experience, not more than about 1 in 10 cases were fatal, these figures should not be allowed to give a misleading impression that the condition was rare. That post-operative lung complications were not rare was shown by hospital records. Out of 3559 operation cases at the Middlesex Hospital 5·6 per cent. developed lung troubles, and out of 6825 at the Mayo Clinic the percentage was 1·2. Regarding the majority of such complications, excluding bronchitis, as the result of infarction or thrombosis (including many cases of so-called "ether pneumonia"), he said that cases of embolism and infarct could be divided into three categories: (1) Those in which death occurs instantaneously and without premonitory symptoms. (2) Cases where death occurs in a few minutes or hours following an acute and sudden crisis, characterised by dyspnœa and pain in the chest. (3) Cases where the patient develops signs of consolidation of part of the lung, following a similar crisis, and recovers. Cases in the first class could hardly be due to ordinary pulmonary embolism, since no normal heart would give up the struggle without at least an attempt to force blood past the obstruction. He attributed such sudden death to embolism in the medulla. In the second and more usual class of case the initial symptoms were always acute pain, accompanied by dyspnœa, the degree of which varied with the area of lung involved, but might be very acute. The dyspnœa was due to the strain put on the heart and not to the limitation of the ventilating surface. Here he deprecated the use of oxygen or strychnine and advised amyl nitrite. If the patient survived for 10 minutes he usually recovered, provided that secondary pneumonia did not supervene. In the non-fatal cases the dyspnœa soon passed off and the pain subsided. The temperature generally rose in the course of a few hours to 100° or 101° F. and a cough developed later, with blood-stained sputum.

Discussing the pathology of the condition, Mr. Lockhart-Mummery noted that only rarely was any evidence to be found as to the site of formation of the clots producing emboli. The inside of the vena cava had been found lined with a layer of clot on occasion. According to Prof. H. Turnbull, the commonest situation for the thrombus to be found was the junction of the internal and external iliac veins. No direct connexion was as a rule traceable between the operation wound and the main thrombus. The source of emboli in the brain was especially difficult

[1] Annals of Surgery, September, 1912.

to determine. A patent foramen ovale might account for some rare cases, and valve thrombi for some others. Mr. Lockhart-Mummery suggested that thrombosis of the pulmonary veins was a likely source, though the presence of this condition had not been frequently recorded by pathologists.

He then discussed various theories as to the mechanism of pulmonary embolism. He believed that embolism of the lung was due not to injury to the blood-vessels produced by the operation, but to sluggish circulation in the veins of the trunk and legs, resulting from the lack of normal movement of the muscles. Anæmia and conditions of lowered vitality seemed to predispose patients towards a post-operative embolism. This explained the fact that children, who have more active circulation, do not appear to suffer from embolism. He did not believe that embolism was due to sepsis. The majority of cases followed by pulmonary embolism were clean cases. There was no proof that septic organisms, or their toxins, in the blood could induce intravascular clotting, and septic diseases which were not the result of wounds, such as whitlows and abscesses, sapræmia, scarlet fever, &c., were not complicated by emboli and infarcts. Venous stasis was a necessary factor in post-operative thrombosis, but not the only cause, since mere lack of movement did not result in thrombosis apart from operation. Hunter had proved that intravascular clotting would not take place in an intact vein, even when both ends of it are ligatured. Recently Prof. Collingwood had shown that intravascular clotting does not follow the intravenous injection of thrombin if the blood is circulating. Thus two factors, the presence of thrombokinase as well as venous stasis, were essential to the formation of a thrombus. The speaker believed that in post-operative cases the clot probably formed either during the operation, or very shortly afterwards, that it spreads, and that later a portion might become detached and produce an embolus.

Treatment.

Treatment was mainly preventive, and should be designed to avoid the occurrence of intravascular clotting after operations. Since we were not in a position to prevent thrombokinase from reaching the blood as the result of a wound, our efforts must be directed towards the prevention of venous stasis. Preliminary purgation of the patient should be omitted or at least carried out five or six days before operation. Starvation both before and after the operation should be abolished. Proper mattresses should be available for operating tables, and during the operation the patient should not be placed in a constrained position with consequent pressure on the veins. After the operation the patient should be encouraged to move about, or be moved, and the large muscle masses of the legs, thighs, and buttocks should be kneaded, to encourage the circulation in the vena cava. Post-operative embolism appeared to be commoner in this country than in America, where patients were allowed out of bed sooner. Mr. Lockhart-Mummery condemned Trendelenburg's operation for removing a thrombus from the pulmonary artery, on the ground that diagnosis was difficult and that successful cases would probably have recovered in any case.

Embolism an Auto-Infection.

Mr. VICTOR BONNEY thought there could be no doubt that pulmonary embolism was the result of sepsis, but a sepsis presenting very peculiar and obscure features. In much the largest proportion of the cases the disaster occurred between the tenth and twentieth day after the operation, and when it occurred after labour the same peculiar time-incidence obtained also. The period between the tenth and twentieth day after an operation and after labour was also that in which certain other complications common to the post-operative, and puerperal states occurred—namely, iliac, femoral, and popliteal thrombophlebitis, pelvic cellulitis (which was itself probably of phlebitic origin), and superficial phlebitis of the veins of the legs. All these conditions were well known to be commoner on the left side than on the right. Phlebitis in the ordinary sense did not account for pulmonary embolism. It was a comparatively rare thing for clot from a frankly inflamed vein to be liberated into the circulation, and in conditions of acute pelvic suppuration following puerperal infection, non-puerperal salpingitis, and infection of tumours, it was a very rare thing to get pulmonary embolism, though an acute infective inflammation of the pelvic veins was present. Something went on between the tenth and twentieth day of which we were at present ignorant. In nearly all instances of pulmonary embolism, whether after operation or after labour, the progress of the patient had been fairly satisfactory up to the time of the disaster, though if the temperature chart was studied it would rarely be found to be quite normal. In many cases the temperature kept at about 99° F. every evening, whilst in others there was present what Mr. Bonney called "subnormal fever," the temperature varying between 97° in the morning and 98·4° in the evening. The importance of this "subnormal fever" as an indication that things were not right with the patient, was not yet, he thought, fully appreciated. Pulmonary embolism was especially associated with the uterus. It occurred five times in 1791 hysterectomies, or 2·7 per 1000, whilst it only occurred twice in 1410 operations on the ovaries and tubes, or 1·4 per 1000, and not at all in 1134 ventral fixations and ligamento-pexies, or in 1429 operations on the vagina. These figures were from the Chelsea Hospital for Women. In hysterectomy both the ovarian veins and the uterine veins were interfered with; in salpingectomy and ovariotomy only the ovarian veins. In ventro-fixation, ligamento-pexy, and myomectomy neither set of trunk veins were interfered with though the uterus was incised or suffered needle perforation, whilst in vaginal operations neither the trunk veins nor the uterus were interfered with. Iliac, femoral, and popliteal phlebitis, though commoner after hysterectomy than any other pelvic operation, did not exhibit such a marked association as was the case with pulmonary embolism. Mr. Bonney had seen white leg after every variety of pelvic operation, including simple incision of the abdominal wall. Whilst the ovarian veins formed a well-marked leash, the uterine veins were very irregular. Sometimes there was a single big vein accompanying the uterine artery, but more often there were several lying below and in front of the artery. They all found their way into the termination of the internal iliac. As far as he knew there were no valves in this system of veins. In the pregnant uterus, owing to the development of the venous sinuses, the system of trunk veins might be considered as being, during this period, continued into the substance of the uterus. Mr. Bonney thought that probably an auto-infection of the pelvic veins (and most often the uterine veins) occurred during the 10–20-day period, and that this was a mild infection producing thrombosis with very slight adhesions to the vein wall. Thence arose the emboli, particularly if the thrombus was situated in the valveless uterine veins. The improvement in operative technique of recent years had, in Mr. Bonney's opinion, diminished the number of cases of pulmonary embolism. Thus, at Chelsea Hospital for Women, it occurred 11 times in 1573 hysterectomies performed between 1895 and 1910 (6·9 per 1000), but only 5 times in 1791 performed between 1905 and 1918 (2·7 per 1000). In 4430 abdomino-pelvic operations of all sorts, performed between 1895 and 1910 at the same hospital, it occurred 14 times (3·1 per 1000), while in 4461 similar operations performed between 1905 and 1918 it only occurred 7 times (1·5 per 1000). This might be considered as evidence that the infection was conveyed from without, but improved technique protected against intrinsic as much as against extrinsic infection.

The Question of Ether Pneumonia.

Dr. ARTHUR LATHAM referred to the condition under discussion as the most common post-operative lung

complication. In his opinion the bulk of the cases diagnosed as ether pneumonia were really cases of pulmonary infarction, and the friction was due to infarction. In his experience also the majority of cases in whom death did not occur at once recovered, but the temperature often rose to 103°F. or more and took 10 days to fall. The pyrexia was due, as in hæmothorax, to the absorption of fibrinogen or its derivatives. The best treatment was rest, and meddlesome tactics should be avoided. The majority of cases occurred in people who were run down. In medical cases thrombosis occurred late in enteric, after starvation, or where shock had devitalised the patient. The origin of clots could here not be attributed to the surgeon; their source was difficult to determine and probably varied. Dr. Latham cited Sir Almroth Wright's views on clotting to show that if fibrin is detached from the clot at an early stage no trace of its origin need be left. Dr. Latham followed Wright in giving citric acid, not citrates, which were inert, and believed it to have some effect in diminishing a tendency to thrombosis.

Contributory Factors.

Sir CHARLES GORDON-WATSON said that within the last year he had had two cases of pulmonary embolism and three of infarction, and that Dr. B. H. Spilsbury had looked up records at St. Bartholomew's Hospital, and had found nine deaths from pulmonary embolism in 1013 consecutive post-mortems. In the Johns Hopkins Hospital 21,000 gynæcological operations had been followed by 31 deaths from this cause, and 205 cases of phlebitis. The contributory factors were: (1) Loss of fluid in the blood through purging, hæmorrhage, and post-anæsthetic vomiting. (2) Slowing of the blood-stream from post-operative shock, and recumbent and fixed position. Flexion of the thigh led to diminished respiratory effort and muscular effort. Massage and exercises should be used; the patient should not be kept in a fixed position, and no pillow should be placed under the thigh. (3) Trauma to vessels was a necessary factor. Posture played some part; in gall-bladder operations the vena cava was stretched and flattened by the position of lordosis, and the Trendelenburg position also appeared to encourage post-operative embolism. Sir Charles Gordon-Watson drew a distinction between cases of pulmonary infarction and those of embolism. In the former the temperature was irregular, in the latter usually normal.

Dr. J. KINGSTON BARTON said that he always put patients on fresh lemon-juice before and after operations.

Dr. A. E. RUSSELL said that in his experience heart murmurs were often to be heard in these cases, and quoted instances in support of this statement.

The PRESIDENT considered that the apparent increase in cases noted by Mr. Lockhart-Mummery was fallacious; a larger number were now being investigated and correctly diagnosed.

Dr. J. BLOMFIELD said that, as far as we knew, the effect of an anæsthetic on clotting power was negligible. Post-anæsthetic vomiting was the only contributory cause that could be attributed to the anæsthetist. The fact that pulmonary embolism usually occurred 10 or more days after the operation absolved the anæsthetist.

Mr. W. MCADAM ECCLES referred to two cases of embolism following on fractures, and suggested that injury to fatty tissues, as well as to vessels, might account for the condition.

The PRESIDENT quoted experimental evidence from the work of Prof. T. R. Elliott bearing on the cause of the dyspnœa following pulmonary embolism. He commented on the comparative rarity of the association of swollen limbs with fatal embolism. He did not think that embolism was common during the war, when patients were certainly not over-prepared.

Mr. LOCKHART-MUMMERY briefly replied.

ASSURANCE MEDICAL SOCIETY.

EXAMINATION OF THE HEART FOR LIFE ASSURANCE.

AT a meeting of this Society, held at 11, Chandos-street, London, W., on Jan. 4th, Dr. T. D. LISTER, the President, being in the chair, Dr. FREDERICK W. PRICE read a paper entitled Some Points in the Examination of the Heart for Life Assurance, which appears in this issue.

Discussion.

Dr. R. O. MOON said that from the insurance point of view the only thing that mattered was the "expectation of life" of the proposer, whereas to the patient who consulted a physician the important question was the prospect of active life. Modern cardiology had put on a scientific basis the study of disorders of the heart, but much remained to be worked out. He thought it needful to differentiate two varieties of auricular fibrillation: those due to rheumatism in young subjects, and those due to cardiac degeneration usually in older subjects.

Dr. J. STRICKLAND GOODALL welcomed the emphasis laid on physiological standards, although he could not altogether agree with the variation which Dr. Price had given as normal. While at the Middlesex Hospital he made observations on several hundred students, and in no case had he found a physiological pulse-rate as high as 120, or anywhere approaching it. He also thought that the difference of 20 beats between the pulse-rates when lying down and standing up was excessive as a physiological standard; as the result of his experiments he would have put the figure at 10–12 as a maximum. Every cardiac case should have a thorough investigation of the vaso-motor mechanism. He thought this was particularly important from the point of view of insurance. As regards extra-systoles, he could not subscribe to Dr. Price's view that extra-systoles per se were of no prognostic significance. He did not agree that they could be considered without taking into consideration also the underlying cause. From his investigations of approximately 13,000 cases he was of opinion that extra-systoles always arose from some pathological basis.

Dr. R. A. YOUNG said that the assurance practitioner had two problems to deal with: (1) to assess a life from his own observations, and (2) to assess a life from the observations of other practitioners. While the paper might have been helpful in dealing with the first problem, it offered little help in dealing with the second. Dr. Price's suggestion that further questions should be added to those which the proposer already had to answer in his proposal form was to be deprecated. He thought it might be helpful to have a special form to be filled in only for proposers who presented evidence of cardiac derangement, and that questions such as Dr. Price had suggested might thus appear.

Dr. F. DE HAVILLAND HALL pointed out that the assurance practitioner had only a limited time in which to examine proposers. He thought it unwise to place any great reliance on patient's symptoms, and when he did inquire about symptoms he always tried to place the proposer in one of three groups: (1) those with an ordinary mentality, with little or nothing to conceal, who would answer frankly and reasonably; (2) those with something to conceal whose answers were guarded and often untruthful; (3) the type who magnified symptoms and would in fact often return after the examination had been completed to inform one of a trivial symptom. With proposers other than those of the first group, he did not place any reliance on symptoms, and he hardly thought that the addition of further questions regarding symptoms could be generally useful. It would be helpful if doctors had the means of determining, as suggested by Dr. Price, whether the symptoms of cardiac distress were increasing or decreasing, and it would undoubtedly enable more accurate prognosis to be formed, but the opportunity rarely occurred in assurance practice. The

position at which the murmur of aortic reflux was best heard was at the left border of the sternum in the region of the third costal cartilage.

The PRESIDENT felt glad that Dr. Price had emphasised the importance of examining the proposer while standing and while lying down. He regretted that the question of the "under average annuity" had not been discussed, for this type of proposer tended to exaggerate his symptoms in the hope of purchasing an annuity for a reduced sum.

Reply.

DR. PRICE said that the purpose of his paper was to point out that correct diagnosis could almost always be made in cases of cardiac derangement apart from instrumental means. He had recently investigated a certain number of cases by ordinary methods, and recorded his diagnosis, when the cases had been investigated by means of the polygraph and the electrocardiograph and the diagnoses found to show no disagreement. In spite of Dr. Goodall's criticism, he adhered to his opinion that extra-systoles by themselves were of no significance. Proposers suffering from auricular fibrillation were not acceptable for life insurance other than for a short term, although auricular fibrillation in itself was not of very great importance. What was of importance was the rate of ventricular contraction in these cases, and cases could only be accepted when the ventricular rate was only slightly raised and could be controlled by small doses of digitalis. In such cases the prognosis was not by any means as gloomy as was supposed.

Reviews and Notices of Books.

PHYSIOLOGY.

Traité de Physiologie Médico-Chirurgicale. Par CHARLES RICHET, Professeur de Physiologie à la Faculté de Médecine de Paris, Membre de l'Académie des Sciences; et CHARLES RICHET, fils, Chef des Travaux de Pathologie Experimentale, Paris. Paris: Félix Alcan. 1921. With 141 figures. Pp. 1452. Fr.75.

THE book is an entire departure, the authors' intention being to indicate what in their opinion it is indispensable that a medical man ought to know regarding physiology as the basis of medicine, as well as the science introductory to medicine, and the one whose applications to pathology, clinical study, and therapeutics are of fundamental importance. It is a grand conception and one which hitherto has not been put into a practical shape. Emulating the work done for anatomy half a century ago, in the "Traité d'Anatomie Médico-Chirurgicale," by A. Richet, father and grandfather of the authors, in this treatise they propose to do a corresponding service to physiology and pathology.

The functions of relation are first considered—i.e., the nervous and muscular systems, including the central and peripheral nervous systems and the organ of sense. The chapter on Epilepsy is an example of the authors' method of treating an eminently clinical subject on physiological lines. In passing, we may note that in what is called by us Jacksonian epilepsy Hughlings Jackson's name is associated with that of Bravais, and the symptom-complex appears as "l'Épilepsie Bravais-Jackson." Much attention is given to the action of anæsthetics on the central nervous system. In this connexion we may call attention to Prof. Richet's views on the mechanism of death by chloroform, largely derived from his experiments on animals—a mechanism which he states is of fundamental interest for the surgeon, as it undoubtedly is. He states that in the numerous physiological experiments made by him on anæsthetics, he has never succeeded in killing an animal by "syncope respiratoire," it is "la syncope du cœur" which constitutes the danger. As to the general principles which should govern the administration of chloroform, above all attend to the heart and the pulse, the surveillance of respiration is only of secondary interest. It is only interesting because it is an index of the cardiac circulation. In the figure showing the position of the localised areas on the cortex cerebri the figure of Sherrington would, we think, be preferable to that of Horsley and Dejerine. The new conceptions and views on aphasia are discussed. We learn that it was in 1867 that the true explanation of what is known as recurrent sensibility in peripheral nerves was given by A. Richet. The cerebral circulation is fully dealt with in its pathological and clinical aspects. In the chapter on the eye we failed to find the name of Argyll Robertson as applied to the state of the pupil which bears his name and is so familiar in this country. The remarks on pain and the whole chapter on the skin are particularly interesting, and considerable attention is given to the cutaneous vaso-motor phenomena which result in health and disease when a blunt point is drawn over the skin.

A broad view is taken of the functions of nutrition, beginning with an admirable disquisition on animal heat and passing on to circulation, digestion, kidneys, respiration, and the blood glands. Naturally serum therapeutics are fully treated and so is anaphylaxis—a word coined by Prof. Richet. The exposition of the subjects hunger, thirst, and starvation is excellent and illuminating. In dealing with the internal secretion of the stomach, perhaps the name of Edkins was inadvertently omitted. The survey of the functions of the liver is succinct and practical. In the discussion on absorption in the liver, the authors point out that in this organ absorption is rapid and affords a channel whereby a substance may be rapidly introduced into the circulation. The injection of 3–4 c.cm. of chloroform into the liver of a dog causes almost instantaneous death. It is suggested that in the case of man, when it is urgent to introduce some substance rapidly into the circulation, this might be done by an interstitial injection into the liver, and the result will be as rapid as if the substance were injected into a vein. The authors recur to a similar subject when dealing with absorption by the lungs. A dog may be killed by one inspiration of chloroform—a very striking experiment—which shows the way chloroform ought not to be given. Fluids also are absorbed with great rapidity by the lungs if introduced through the trachea. Several litres of water can thus be introduced into the lungs of a horse without producing asphyxia. There are some interesting suggestions as to the subcutaneous and intravenous introduction of oxygen.

The work is admirable and is a judicious blend of physiology and medicine, the one illustrating the other, and everywhere one comes on many suggestive remarks and astute criticisms the results of a life-long devotion to original work on a vast variety of subjects in the experimental laboratory. After the manner of Prof. Richet, the descriptions of processes are not only graphic, but are such that in reading one forgets that we are reading a text-book, so characteristically clear, luminous, and attractive is the style of the senior author.

Manual of Physiology. Third edition. By H. WILLOUGHBY LYLE, M.D., B.S., F.R.C.S., Ophthalmic Surgeon to King's College Hospital, and DAVID DE SOUZA, M.D., D.Sc., F.R.C.P., Physician to the Westminster Hospital. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. xvi.+824. 21*s.*

IN this edition the name of Dr. de Souza has been added to that of the original author, whose book has earned itself a place in the front rank of students' text-books. It is the custom of most professional physiologists to consider books of this sort as cram-books; they would have the matter treated with more pretention to literary style or with more regard to latter-day refinements. The student, the author's

paymaster, has different views; he wants his matter in tabloid form—handy, portable, complete, even if difficult of solution. The work represents a wonderful achievement; no other book of twice the size contains the same amount of matter; nothing of importance is omitted, nothing useless retained. For revision work no student could desire a better or more complete book, and no coach can afford to ignore it. For those requiring more philosophy or a wider vision this manual is not intended: the critical may even find minor errors therein. For example, p. 384, "the muscles were capable of taking oxygen from a stable compound like methylene-blue" (which contains none), and again, "the oxygen tension of the tissues is nil." On p. 761 we read, "A. V. Hill used a very sensitive thermopile and a *string* galvanometer." The number of actual errors is, however, surprisingly small when the great mass of matter dealt with is taken into account. The authors are certainly to be congratulated and encouraged, as their book has a very definite place in the teaching of physiology under the present system.

TREATMENT AT THE UNIVERSITY OF BONN.

Die Therapie an den Bonner Universitätskliniken. Third enlarged edition. Edited by Prof. Dr. RUDOLF FINKELNBURG. Bonn: A. Marcus and E. Webers. 1921. Pp. 745. M.36.

THIS bulky synopsis of the various forms of treatment practised at the hospitals of the University of Bonn is intended primarily for the use of Bonn medical students. Little emendation has been necessary since the appearance of the last edition, and only the gynæcological section has been re-edited in consequence of the appointment of Dr. Reifferscheid, the former professor of gynæcology to Göttingen. The book is concerned with the whole range of treatment of disease, the various professors and priv.-dozents being responsible for their own departments. Some 50 pages are devoted to a consideration of the prophylaxis and treatment of infectious diseases.

This is a valuable synopsis, inasmuch as it provides an index of the trend of continental practice and, moreover, forms a succinct and lucid model of how such a synopsis can be compiled.

THE OXFORD INDEX OF THERAPEUTICS.

First edition. Edited by VICTOR E. SORAPURE, M.B., Ch.B., F.R.C.S. Edin. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 1126. £2 2*s*.

THIS Index of Therapeutics possesses several new and attractive features. It is written by specialists for general practitioners, and about one-third of the contributors hail from the other side of the Atlantic. In the preface we read that "the purpose of this work is to extend the interchange of ideas and of the methods of practice of each of the great branches of the English-speaking practitioners of medicine." The Index deals fully with medicine, surgery, gynæcology, midwifery, and dermatology, and the whole is presented in a compact and attractive volume. The methods of treatment advised are not intended to be all inclusive, but rather to express the individual opinions of the specialists concerning diseases of which they have made a particular study: the practitioner is thus enabled to obtain the general advice of a distinguished consultant in a form which should enable him to apply it to his own cases. All the articles are clearly written and full reference is made to modern advances of proved value. The doses of drugs are given both in the English and metric scales. When so many of the articles reach such a high standard of excellence, it becomes difficult to single out any for special mention, but those dealing with food sensitisation, hydrology, and the serum treatment of pneumonia will be found especially valuable. In the latter a detailed account of the types of pneumococci is given, the therapeutic importance of which lies in the fact that only one type infecting man yields an effective anti-serum. The student who reads this work simultaneously with a text-book on medicine will find himself subsequently more fully equipped for the battle of practice than the average recently qualified medical man, and will reap the benefit in the more speedy development of the trust of patients; while the practitioner, however experienced, will find in the Index of Therapeutics a reference book of exceptional value. The study of therapeutics is occasionally neglected in the medical curriculum.

ESSENTIALS OF MEDICINE.

Fourth edition, revised. By CHARLES PHILLIPS EMERSON, M.D., late Resident Physician, Johns Hopkins Hospital. London and Philadelphia: J. B. Lippincott Co. Pp. 401. 12*s*. 6*d*.

FIRST published in 1908, this volume forms one of the series of Lippincott's Nursing Manuals. The book is rather too elementary for medical students, though doubtless some about to commence the clinical portion of their curriculum will find their work simplified and elucidated by a study of such outline sketches of disease. The vague general impressions prevalent among those first entering upon clinical work may thereby be replaced by clear, even if limited, mental pictures. The lay reader may also be interested by the facts set out in non-technical language, enriched by highly ingenious and pertinent simile. The first 10 chapters are devoted to a systematic description of the diseases of the various organs of the body. Four chapters deal with infectious diseases and those due to animal and vegetable parasites; one is concerned with constitutional diseases like gout, diabetes, rickets, and scurvy. Other subjects surveyed are disturbances of temperature, respiration, and circulation, and a final chapter is occupied by a consideration of signs and symptoms. A large portion of this chapter is taken up by an excellent description of neurasthenia.

A high standard of excellence is maintained throughout the book, which contains a glossary of medical terms and a good index, also many clear and simple diagrams.

CLINICAL SURGICAL DIAGNOSIS.

Seventh edition (third English edition). By Prof. F. DE QUERVAIN, Director of Surgical Clinic, Berne. London: John Bale, Sons and Danielsson. 1921. Pp. 914. 50*s*.

THE majority of text-books of surgery give a stereotyped account of the symptoms found with each disease. This volume differs from its kind in that, although each disease is considered separately, the symptoms are described more as they would be encountered in the investigation of an actual case. In so doing it correctly reproduces the spirit of the Berne surgical clinic which has been a centre of enlightenment for two generations. This is especially noticeable in the section devoted to injuries of the brain. The classification here used is that recommended by Trotter, and the incorrect term cerebral irritation is omitted. Students and house-surgeons frequently encounter considerable difficulty in determining whether a patient has a cerebral concussion, contusion, or compression. After reading this article carefully many of their difficulties should vanish.

Prof. Quervain in his preface lays stress clearly and judiciously upon the fact that a diagnosis is not to be made merely for its own sake but only as a means of cure, and in this section on brain injuries a clear indication of the treatment for certain symptom groups is given. The section devoted to the localisation of foreign bodies within the skull is extremely valuable and embodies all the recent work carried out during the war. The difficult subject of the intercranial complications of otitis media is also dealt with in a masterly manner and the section will be of great help to those who have

but occasionally to differentiate between these complications. A valuable note of warning is issued as regards tumours of the upper jaw. Probably all surgeons have at some time or other had the same experience as Prof. Quervain of having to treat advanced cases which in the early stages were mistaken for dental or aural lesions.

We must disagree with the advice to use an olivary sound to diagnose œsophageal obstruction; the use of this instrument in cases of carcinoma has not infrequently led to a perforation. Much more knowledge can be obtained by the use of the X rays and an œsophagoscope, so that to-day the sound should never be used. Curiously enough Prof. Quervain states that the diagnosis may be confirmed with the œsophagoscope by the aid of which a piece of the tissue can be removed for examination, but cancerous stricture is so much more frequent than syphilitic stricture that we may well dispense with this method. He apparently places little or no value upon direct inspection of the obstruction. Prof. Quervain follows Kocher in laying more stress upon the blood picture in Graves's disease than is usual in this country. In fact, he states that a normal blood picture in doubtful cases is a piece of evidence against Graves's disease. The section of disease of the thorax has a valuable series of X ray photographs. It is of interest to note that visceroptosis, a common disease almost entirely neglected in the majority of English text-books, is fully discussed. The chapter on diagnosis of gastric and duodenal ulcers is especially valuable and brings the text-book description into line with the recent work. The results of the X ray investigations are well portrayed.

It is impossible to deal with more than a few isolated examples, but nearly every chapter gives illustrations of the novel and arresting way in which the subject-matter is presented. In the preface, Prof. Quervain states apologetically that the illustrations are, with but few exceptions, derived from his own observations, and he fears they may be incomplete. No apology is needed, for the numerous illustrations are of exceptional value and each one has been carefully chosen for its clinical importance. The book is written in so clear and lucid a style that it is a pleasure to read, and will be invaluable to senior students, house surgeons, and practising surgeons.

HÆMORRHAGE DUE TO GUNSHOT WOUNDS IN WAR.

By Dr. GIUSEPPE FANTOZZI, University of Pisa. Pescia: Benedetti and Niccolai. Pp. 385.

THIS work is an extensive compilation rather than an original treatise. The bibliography with which it concludes occupies no less than 116 pages and ranges from the sixteenth century to the present time. Apart from short abstracts of a number of cases observed personally by the author there is nothing particularly novel to call for comment. The most readable chapter is a foreword which deals with some historical cases of hæmorrhage ranging from Homer to Plutarch and Diodorus Siculus, and so on, to General Larrey. The large section taken up with the anatomy of the vascular system and the symptomatology of hæmorrhage in general appears to us quite unnecessary in a work dealing with gunshot injuries. A table of 79 cases showing the results of operative treatment by various authors of traumatic arterial and venous aneurysms is useful. With regard to penetrating wounds of the thorax associated with hæmothorax, the author records a not very successful attempt made by him to clear up the question whether the effused blood coagulates as Trousseau and Nélaton believed, or whether coagulation is prevented by an anti-coagulant secreted by the serous membrane. In an appendix the subjects of shock and transfusion of blood are dealt with, reference being made to the work of Cowell, Elliot Smith, Lee, Mott, Wright, and Colebrook among English observers.

Dr. Fantozzi's book is quite readable and will doubtless interest those whose acquaintance with the subject is limited.

DERMATOLOGY.

The Essentials of Cutaneous Medicine. By WALTER JAMES HIGHMAN, M.D. London and New York: The Macmillan Company. 1921. Pp. 482. 32*s*.

THIS work has apparently been written for beginners in dermatology and for those students of general medicine who wish to acquire some knowledge of skin diseases, but even professed dermatologists will read it with interest and appreciation. In the first place, Dr. Highman has attempted a classification of diseases of the skin, based on their ætiology, which is far in advance of any other we have seen, and although admittedly a tentative one, it contains little to provoke adverse criticism. Though parts of it are written almost in note-book style, the book, which consists of less than 500 pages, provides nearly everything that is essential, and a great deal that is not found even in text-books of more than double its size. Some readers may, perhaps, be disappointed that the author, who is an expert histopathologist, should have seen fit to say so little concerning the microscopical appearances of skin lesions, but he rightly considers that detailed histological descriptions are not required in a book written essentially for students. At the same time the following dictum is worth quoting: "To deride the microscope in its proper sphere is inspired by laziness and ignorance rather than by a keen longing for clinical acumen, for it is easier to make sport of an unacquired attainment than to master it."

The section on urticaria is good, and Dr. Highman has dealt with its ætiology in a logical and complete manner. He is evidently inclined to follow Norman Walker in wishing to abolish the word eczema, for he points out that it is absurd to attempt to differentiate between dermatitis and eczema, since they are clinically and microscopically identical; here again the question of ætiology is admirably discussed. It is interesting to note that Dr. Highman considers dermatitis herpetiformis to be "evidently a systemic infection," the lesions being "due to bacterial embolism," and that he includes granulosis rubra nasi, with adenoma sebaceum, among "diseases that are probably nævi." Acne necrotica is, perhaps rightly, put in the tuberculide group, but we do not agree that tuberculin is utterly useless in the treatment of the tuberculides and lupus vulgaris. For the local treatment of the latter disease, while preferring the Finsen light, he also advises massive doses of X rays and radium, but he does not point out the risk of secondary epithelioma to which such treatment undoubtedly predisposes. The statement that "very frequently lupus is the starting point of visceral tuberculosis" is surely an exaggeration, if not actually untrue. Dr. Highman is, we think, right in his view that the seborrhœic disorders are associated with disturbed sugar metabolism, but he is almost certainly wrong in denying that heredity is a predisposing factor in psoriasis. The last section of the book deals with syphilis, and fully maintains the standard set by the rest. There are nearly a hundred excellent illustrative photographs.

This work should be widely read not only by dermatologists, but also by general physicians, who will appreciate that "the true dermatologist is an internist who knows the skin."

HANDBUCH DER CYSTOSKOPIE.

Fourth edition. By Dr. LEOPOLD CASPAR, Universitätsprofessor in Berlin. Leipzig: Georg Thieme. 1921. With 12 coloured plates. Pp. 388. M.264.

IN this, the fourth, edition Dr. Caspar has not found it necessary to make many alterations or additions to the text. The excellent chapters on the optical principles involved in the cystoscope have been made more complete. The text has been largely revised in connexion with renal function tests—a subject prominent in English medical circles to-day. As a result of a wide experience Dr. Caspar concludes that colour tests, though giving some indication of the work of the kidneys and making examination easier, are not

reliable. He trusts in the concentration of solids in the blood and the urine, using the cryoscopic methods of estimation. Other methods are described, such as the diastase reaction, the phloridzin tests, Ambard's coefficient, and so forth, but Dr. Caspar does not consider them to be so valuable as the solid concentration test applied to blood and urine. The chapters on diagnosis and treatment are excellent, irrigation of the pelvis of the kidney and the use of the diathermy and other high-frequency currents being fully discussed. We notice that collargol is still recommended for pyelography; we have found 25 per cent. solution of sodium bromide equally effective and less troublesome to the patient. In large tumours of the bladder treatment with trichloracetic acid is advocated, but destruction by diathermy, either by prolonged cystoscopic application or through a suprapubic incision, would appear to be more rational.

The book is well got up and the numerous illustrations include 12 coloured plates. Each of these has six views, and this series of 72 cystoscopic pictures of the bladder under normal and pathological conditions adds very materially to the value of this edition of Dr. Caspar's book.

THE BLOOD SUPPLY TO THE HEART.

By LOUIS GROSS, M.D. With Introduction by HORST OERTEL. New York: Paul B. Hoeber. 1921. Pp. 171. 8s.

THIS book is the result of many years of steady and excellent work on a subject which has always provided causes of dissension among anatomists. Only those who have had some practical experience of the difficulties attending efforts toward settlement of the various questions concerned, and of the evident unreliability of the results usually obtained, can appreciate at its full the value of such a record. Dr. Gross has worked out a technique which appears to combine simplicity with efficiency, and makes use of X rays in cleared and other specimens to demonstrate his results. The work had its inception as part of a general study of post-natal evolution, associated with Prof. Oertel's well-known researches connecting this extensive and comparatively little-known subject with the occurrence of disease; hence it is not surprising to find that one of the most interesting parts of the book is that in which the age-changes in the coronary circulation, probably unappreciated by most of us, are shown. As Prof. Oertel says in his introduction, the book is of interest to anatomist, physiologist, pathologist, and clinician alike. It is profusely and beautifully illustrated by photographs, though the majority of readers would be helped by some more detailed description of the features of certain of these figures. This, however, is a point of little consequence, and cannot be held to detract from the merits of this most excellent work, which closes with a very full bibliography. Both author and publisher are to be congratulated on the appearance of this book.

CHEMISTRY AND CIVILISATION.

By ALLERTON S. CUSHMAN, A.M., Ph.D., Director, Institute of Industrial Research Inc., Washington, D.C. Edinburgh: E. and S. Livingstone. 1921. Pp. 151. 15s.

THIS little volume—one of the most interesting of its kind—embodies a series of lectures delivered by the author at the Wagner Free Institute of Science, Philadelphia. Dr. Cushman was for ten years in charge of government research work in the U.S. Department of Agriculture, and, during the war, controlled the manufacture of military explosives at Frankford Arsenal; it will thus be seen that he has had first-hand knowledge of a great variety of chemical problems. In six chapters Dr. Cushman deals in a semi-popular and most readable manner with the history of chemistry, with many of the applications of chemistry in the service of man and of industry, with the chemical aspects of war, agriculture, fuel, radio-activity, and the Einstein theory. There is no allusion to vitamins. A short appendix by Carleton H. Wright, Lieut.-Commander, U.S.N., on Nitrogen Supplies, gives a succinct account of the Arc, Cyanamid, Haber, and Cyanide processes for the fixation of nitrogen, together with much interesting matter connected with the commercial side of this industry.

Six photographs of historically famous chemists are included in this book, which can be warmly recommended to those interested in the subject with which it deals.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—This Anglo-American journal continues to maintain a high level. A useful part is that devoted to abstracts of current literature, and this, which occupies at least half of each issue, gives to readers pertinent information on much that is issued in relation to industrial hygiene in all its aspects. We understand that the editorial board of the Journal is undergoing reconstruction, possibly with a view to the more adequate representation of the British side of the work.

The November issue of the Journal contains a paper on spray infection by S. R. Douglas and Leonard Hill. These investigators spread a microbic spray uniformly through the air in two bell-glasses placed in apposition, and then arranged the glasses separately over Petri dishes in chambers exposed to different conditions. Humidity or dryness was not found to influence materially the number of colonies which subsequently developed. Varied procedures designed to test the effect of warm and cold air led to the conclusion that owing to condensation of moisture cold articles collect more particles than do warm ones. Particles of water or dust in moving air were found on hitting infected surfaces to carry away microbes, and in this manner to help the spread of infection. In a further series of experiments the air of an empty room was sprayed with microbes; when windows were open many fewer colonies developed on the exposed Petri dishes than when the windows were shut. Similarly, when with closed windows the air was kept in motion by a fan, fewer colonies developed than when the air was still. Lastly, fewer colonies developed from the air of a moist close room than from that of a dry close room, but this result may have been vitiated by destruction of the organisms in the air by the bunsen burners used to boil water needed to provide humidity.

On two interesting papers dealing with cardiac disease in industrial workers, published in the December issue, we commented last week.

MATERNITY AND CHILD WELFARE.—This journal, which is the official organ of the Central Council for Infant and Child Welfare, is now issued on the first day of every month. The January number contains a suggestive article by Dr. Flora Shepherd on the Psychology of the Mother and Her Child. Her views on concentration in children are unorthodox. She maintains that the power of concentration is greater in young children than in adults, but is lost through faulty training, and prophesies that in the future the teaching of one subject, such as a modern language, will be accomplished in two or three years of continuous study throughout the day, instead of in seven or eight years of teaching for a brief period daily.—Dr. L. Emmett Holt discusses the Health Education of Children in an illustrated article, and Miss M. Stansfeld writes encouragingly on Physical Training in Relation to Child-Bearing, giving satisfactory detailed statistics of the menstrual history of 100 and the obstetric history of 37 old students of the Bedford Physical Training College.—Mr. F. W. Sherwood deals with the children of unmarried parents in a short annotation.—Editorial comments on subjects of topical interest, reports of meetings of County Federations for Maternity and Child Welfare and other associations, with notes on books and journals, news, and correspondence are also included in an interesting issue.

THE LANCET.

LONDON: SATURDAY, JANUARY 14, 1922.

Medical Research in 1921.

A COMMITTEE of expert agriculturists entrusted with the duty of improving the crop of different species, all difficult to rear, would probably spend a certain proportion of the funds at their disposal on a private experimental farm staffed by experts and the rest on subsidising farmers working under different conditions throughout the country. This is the policy adopted by the Medical Research Council in establishing a central research institute at Hampstead, and instigating or supporting by grants special researches to be carried on at suitable places. Though few of the results have yet reached maturity and the growth of others has been stunted, the main crop appears to be coming on steadily and satisfactorily. The grant of £130,000 provided for the total expenditure is £5000 in excess of that allotted last year, but the increase was only nominal, since the provision hitherto made for the work of the Industrial Fatigue Research Board and for research into mental disorders was discontinued, and the Council had to assume responsibility for both these important activities or to see them perish. The care with which the resources of the Council have been husbanded may be estimated by the low cost of administration, which has never exceeded 6 per cent. of the annual expenditure. In the introduction to the seventh annual report, which appears to-day,[1] the Council draw special attention to the extensive scheme for the study of problems of child life undertaken by them, the practical object of which is to secure knowledge, at present greatly lacking, which may be a sound guide to the conservation of healthy life in the born or unborn child; also to the large group of researches dealing with vitamins. Although we have still almost no understanding of the nature of these elusive substances or of their mode of action, empirical knowledge of the broadest practical value has already been acquired, and great if unforeseen advances in medicine will come as the clue to the real nature of these substances is gained. Other branches of work to which attention is specially called are the investigation of the laws of epidemics—now being studied in a population of mice under controlled conditions—and research on radium. The Council point out that it is imperative that knowledge should be gained as rapidly as possible to guide the present almost indiscriminate use of radium; because, while it is known that in some varieties of disease in certain organs radium may save life, it is also established that in some conditions and in some doses, both still unknown, the rays may, instead of saving life, actually accelerate disease so that even operation is useless.

Activities in progress at the National Institute for Medical Research were dealt with fully by Dr. H. H. DALE, its director, in a lecture to the Research Defence Society published in our issue of July 9th, 1921, and we need only say that the work described by him is being developed and extended. In the appreciation of the research work done at this Institute what may be regarded as its routine work must not be ignored. The Institute is already beginning to fulfil in the biological sphere of medicine functions analogous to those of the National Physical Laboratory, by special studies of methods of measurement and assay, and by the determination of standards in the absence of which the scientific progress of medicine has been greatly hampered. The third section of the report records the help given to the younger workers in the clinical units attached to teaching hospitals, and the connexion, direct and indirect, between work done in these hospitals and at the National Institute is a valuable asset to both sides. Certain research work of medical men engaged in professional practice is also being subsidised, and we may perhaps anticipate that such grants will be extended in the future. Section 4 deals with the determination of biological standards and the methods of biological assay and measurement carried out at the National Institute and at the Standards Laboratory at Oxford, and includes some account of the National Collection of Type Cultures housed at the Lister Institute, and of the scheme of anthropometric methods and standards of medical measurement drawn up by a special committee under the chairmanship of Sir ARTHUR KEITH. The history of the collection, disposal, and study of the army medical statistics is described in Section 5.

Research schemes in specific subjects form the substance of Section 6, and this is perhaps the most interesting part of the report. Between short accounts of work published in the course of the year, with references, are interspersed suggestive, if tantalisingly brief, notes on things now in progress. The mountain of rickets unhappily appears to enlarge as we approach it, but some of the many wise investigators must eventually find a pass to conquer it. Problems of bacteriology and immunology claim many workers, and biochemistry is plainly a subject from the further study of which valuable results may be expected shortly. The attacks on tuberculosis are increasing in number and intensity. The scientific investigation of mental disorders, hitherto somewhat starved, will probably receive increased attention when more funds are available. Industrial medicine and industrial fatigue research are slowly developing, and advances in these subjects are chronicled in the seventh section of the report. It is distressing that under present conditions the Council must continue to omit the further prosecution of certain researches which might be of great value in the advancement of preventive and curative medicine, for, in the words of the Committee for Medical Research of the Privy Council, "the financial position of the country undoubtedly calls for the fullest possible development of the sciences by which the health, and so the productivity, of the people may be protected and increased." We trust that these pregnant words may be duly pondered by those responsible for the national finances. We are only too well aware of the urgent need which exists for cutting down all unproductive expenditure, but we should regard as a public calamity any curtailment of such work as is carried out by the Medical Research Council. It is work which has already paid for itself many times over, and promises a still richer harvest in the future to make good its cost.

[1] Report of the Medical Research Council for the Year 1920–21. H.M. Stationery Office. 3*s.* 6*d.*

Surgery and the Jaundiced Patient.

LAST week we dealt with the estimation of hepatic function mainly from the medical standpoint. It is notably strange that, considering the size and physiological importance of the liver, hepatic insufficiency has only recently been recognised as the greatest factor militating against success in operations

performed upon the biliary tract. To the urologist, obstruction to the outflow of urine from the kidneys spells damage to these organs and indicates the greatest circumspection in carrying out any measures directed to the relief of the urinary retention. Experience has taught him that the kidneys are working with a reduced but unknown margin of safety; so he attempts to measure what power they have in reserve, and thereby the likelihood of success which will attend his premeditated operation, by applying tests of renal efficiency. Yet, although it may be said that the proper functioning of the liver is more essential for the maintenance of life than that of the kidneys, as evidenced by the relative times of survival of animals deprived of these organs, but very little effort has been directed to the discovery of practical methods of estimating hepatic sufficiency. After gall-stones have been removed from the common bile-duct the anxiously awaited appearance of stercobilin in the stools may be delayed for one or two weeks or even longer. During this period the patient may gradually sink and die, a fate (when the autopsy has revealed that no stones have been overlooked) comparable with that of the patient who succumbs to uræmia after a prostatectomy. CRILE [1] has recently applied the lessons of urinary surgery to operations upon the biliary tract in the presence of jaundice. He recommends that in such cases a decompression operation only should be done at first, the bile being gradually and intermittently drawn off by a tube inserted into the gall-bladder, or, when this receptacle is shrunken, by a tube in the common duct. After an interval, during which recovery of hepatic function takes place, the operation for removal of stones can be proceeded with. If the by no means negligible mortality of operations upon jaundiced patients can be reduced in this way, the two-stage operation for stone in the common duct will be accepted by surgeons as the method of choice in most cases, until we possess methods of estimating accurately hepatic insufficiency despite the increased technical difficulties likely to be encountered at the second laparotomy, and other obvious objections. WILLIAM J. MAYO [2] also agrees that in the presence of jaundice extensive operations should not be performed and asserts that the procedure should be limited to the simple removal of stones from the common duct, cholecystectomy, if necessary, being left to some subsequent occasion.

It has long been recognised that operations upon patients suffering from obstructive jaundice are attended by a serious risk of secondary hæmorrhage, to which they may succumb. When the operation is done on the biliary tract the hæmorrhage is usually within the abdomen and is very difficult to control. Several observers have shown that this unusual liability to hæmorrhage is associated with a decreased power of coagulation in the blood of a jaundiced patient. The effect is probably due to an alteration in the calcium content of the blood, for which the bile salts in the circulation may be responsible. Operations upon jaundiced patients should be avoided if possible, but occasionally a non-malignant obstructive jaundice cannot be relieved in any other way. It is therefore necessary to find some means of removing this risk before operation, or, in other words, to attempt to reduce to normal the coagulation time of the patient's blood. LEE and VINCENT [3] have shown that, although the administration of calcium salts by mouth will not diminish the abnormally low clotting time of the blood of jaundiced patients, because so little is absorbed from the alimentary canal, intravenous injections of calcium chloride are harmless, and will often reduce the coagulation time to normal. Dr. WALTMAN WALTERS, in an article on "Pre-operative Preparation in Obstructive Jaundice," [4] recommends three daily injections of 5 c.cm. of a 10 per cent. solution of $CaCl_2$, and in 15 cases at the Mayo Clinic results have been satisfactory. The effect of the treatment is estimated by taking the coagulation time of the blood before and after the injections, and in most cases the time was found to be greatly reduced. The injections do not seem to have any deleterious effect upon the heart; in fact, it is believed that the patient's toxæmia is actually reduced by combination of the calcium with the bile pigments. Dr. WALTERS remarks that if the treatment is not effective, then a blood transfusion is indicated 24 to 48 hours before operation. Such a prophylactic transfusion of blood has been found to have a favourable, though transient, effect, and transfusion is the obvious treatment when the hæmorrhage has actually occurred. Apparently, therefore, transfusion remains the treatment upon which most reliance is to be placed and has not been entirely superseded, but the claims made for calcium chloride injections demand that this treatment shall be given an extended trial.

[1] Crile: The Technique of Gall-bladder Surgery in the Presence of Jaundice, Surg., Gynec., and Obstet., 1921, xxxiii., 469.
[2] William J. Mayo: The Surgical Significance of Hepatic Incompetency, ibid. p. 463.
[3] Lee and Vincent: The Relation of Calcium to the Delayed Coagulation of Blood in Obstructive Jaundice, Arch. Int. Med., 1915, xvi., 59–66.

Hygiene of Sex-Love.

IN a famous preface to his sermons Bishop BUTLER said that confusion and perplexity in writing were without excuse, for anyone may if he pleases know whether he understands or sees through what he is about, and it is unpardonable in a man to lay his thoughts before others when he is conscious that he himself does not know whereabouts he is or how the matter before him stands. Lord DAWSON falls under no such reproach; in dealing with a difficult and contentious subject he has thought out the issues. He was invited by the Church Congress, held at Birmingham last October, to speak on sexual relationships, and in response to wide request, he has now published [5] the address, which he then gave, with a foreword in which he replies to some of the discussion occasioned by his speech. Clearly, Lord DAWSON understands and sees through what he is about—namely, a study of the significance and purpose of sex-love in a well-ordered and Christian community. The early part of his speech dealing frankly with healthy sex-life has brought him no reasoned disagreement, a fact which gives cause for thought in comparison with the furious disagreement resulting from the discussion of the morbid aspects of sex-life when such discussion became frank a few years ago. The controversy aroused by the second part of his Birmingham speech, dealing with the control of conception, will, Lord DAWSON thinks, disappear when his critics read and study the full text of his address. His most doughty opponents have wished to see restored the large families prevalent 50 years ago, which seem now to be seldom attainable or even desirable. But the present generation may well be content with smaller families of children born at predetermined intervals, while appreciating Lord DAWSON'S hint to the State to provide educational facilities and progressive rebate of taxation for each

[4] Surgery, Gynecology and Obstetrics, December, 1921.
[5] Love—Marriage—Birth Control. By Lord Dawson of Penn. Nisbet and Co., Ltd. Pp. 27. 1s.

of three children born after the second, where the father is 25 years of age or over.

Recognising sex-love as an imperious instinct which must be guided into healthy channels unless irregular channels are to be forced, the teaching of the Church as given in the marriage service nevertheless hardly contains the whole truth. Marriage may have been ordained for certain persons devoid of the gift of continency as a remedy against sin, but this view does not cover the whole position. Lord DAWSON asked those attending the Church Congress to recall their own experiences of marriage and honeymoon, and he paints the absurdity of putting before ardent lovers, eager and expectant of the joys before them, the Lambeth picture of marriage. To those who look askance at sex-love because it is passion, he replies, as EDWARD CARPENTER replied a generation ago, that passion is a worthy possession and that those who decry it are confusing it with sensuality; to complete the objects of marriage given in the service the words should be added: "the complete realisation of the love of this man and this woman, the one for the other." From this broad and wholesome view of sex-love and its implications Lord DAWSON naturally passes on to deal with the related question of the control of conception. The reasons leading parents to limit their offspring are, he admits, sometimes selfish but more often honourable and cogent. To decry illicit intercourse and interpose obstacles to marriage at one and the same time he finds an idle occupation. Birth control by abstention is either ineffective, or, if effective, is pernicious. To expect a young married couple in love with each other to occupy the same room and to abstain, say, for two years he finds preposterous. You might as well put water by the side of a thirsty man or woman and tell them not to drink it. Having thus reduced the issue to artificial control, the whole question turns on whether the means used are for the good or the harm of the individual and the community. Generally speaking, birth control, Lord DAWSON finds, is inadvisable before the first child; after that he does not admit that artificial control is harmful in leading to excessive indulgence. The proper and efficient restraints on such indulgence are to be found in mutual consideration, sympathy and tenderness, and the pressing claims of life's duties—not forgetting, in OSLER'S words, the other altars than those of Venus upon which the young may light fires.

A study of Lord DAWSON'S address as now published will arouse the medical profession to the importance of thinking this question out, both individually and collectively, in a responsible way without bias. It is evidently no argument against control of conception to say that this or that check is physically harmful, as was done at a recent medical discussion. It is the business of the medical profession to undertake this side of the job and to find out a check which is not harmful. It is among the professional classes that birth control is chiefly practised, and the medical profession should be in a position to justify in public the actions which it initiates or condones in private. There is a very natural hesitancy to dogmatise on these matters, for perplexity and confusion of thought are here in very special degree without excuse; it is, in BUTLER'S words, "coming abroad in disorder which he ought to be dissatisfied to find himself in at home." The disorder at home can only be righted by informed discussion; a joint meeting of gynæcologists, neurologists and psychopathologists might begin by clearing some of the ground, to be filled in by the experiences of general practice. The opportunity herein offered to medicine of keeping in touch with young thought in the country is great and attractive. Lord DAWSON laments the ever-widening gap between the formal teaching of the Church and the actual belief of the present generation. Youth is trying to build a superstructure more in accord with the progress of revelation, not only in religion but in science, and it is on such a question as birth control that medicine with its traditions and ideals is fitted to give a lead. Lord DAWSON has pointed the way.

Annotations.

"Ne quid nimis."

INDIAN UNIVERSITIES AND MIDWIFERY.

SEVERAL Indian correspondents have informed us of the difficult situation produced in India by the action of the General Medical Council in relation to the teaching of midwifery before the situation was cleared up by the President's address at the November session of the Council. In March, 1921, the executive committee of the General Medical Council, after considering the replies received from Indian universities and colleges regarding the course of study in midwifery pursued by candidates for Indian medical diplomas, resolved that these diplomas under existing conditions did not furnish a sufficient guarantee for the efficient practice of midwifery within the meaning of the Medical Act, 1886. As a result of this resolution a letter was addressed to the Indian teaching centres to the effect that unless the requirements in regard to midwifery were brought forthwith into accordance with the Council's resolutions recognition of the diplomas by the Council must cease, and giving February, 1922, as the time-limit up to which evidence of compliance was to be submitted. This letter, we learn, came as a bombshell to the governing bodies of Indian universities. It was not denied that the General Medical Council were acting within their powers in insisting on a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of midwifery, but objection was taken to the time-limit imposed.

The Indian press, both lay and medical, made a grievance of an alleged difference in tone and temper between the communication on the same subject made to medical institutions in Great Britain and that sent to India. The ultimatum, as it was called, gave rise to a heated debate in the Legislative Assembly in September last on a resolution introduced by Rao Bahadur C. S. Subramaniam, a member from Madras Presidency, who recommended that if the General Medical Council carried out the threat to withhold recognition of the medical degrees and diplomas of the Indian Universities, the Secretary of State for India should be moved to stop recruiting for the Indian Medical Service in England, or to admit the possession of an Indian degree or diploma as an alternative qualification for admission to the Service. It was urged in the discussion that the General Medical Council had not taken into consideration the peculiar Indian conditions which made it even more difficult than in England to secure for the student coöperation in the delivery of a required number of cases. The position was not made easier by the fact that the action on the part of the Council synchronised with the increasing agitation in India for Indianisation of the services. Our correspondent at Madras claims that the training in midwifery at this university is equal to anything to be obtained elsewhere, while the Madras Maternity Hospital, rebuilt and reorganised while Major-General G. G. Giffard was its superintendent, compares favourably with maternity hospitals in other parts of the world. It is not anticipated that Madras University will have difficulty in satisfying the General Medical Council that its students receive satisfactory instruction in midwifery, when the proposed tour of inspection is made.

MINERS' PHTHISIS.

GRADUALLY the scheme for protecting the miners on the Rand from tuberculous silicosis is beginning to show results. Dr. W. Watkins-Pitchford, who is responsible for the medical section of the annual report of the Miners' Phthisis Board,[1] concludes that there is already a general improvement in the health of the whole body of workers. When we compare the health statistics of the present year with those of past years the strict initial examination through which a new worker has to pass before he is employed must be kept in mind. The uncompromising standards maintained at these examinations may be estimated from the permanent rejection during the 12 months under review of 57 per cent. of all candidates on account of respiratory defect or other physical unfitness; while another 16 per cent. were temporarily rejected with the option of applying again. Since the Miners' Phthisis Medical Bureau commenced its work in 1916, 3592 men who had passed the initial examination obtained employment underground; of these the reassuring statement can be made that two only have developed simple pulmonary tuberculosis and none have become silicotic. Great care is taken to free the personnel working on the gold-mines from subjects suffering from pulmonary tuberculosis; it is held that no tuberculous person, whatever his colour or occupation, should be allowed on mine premises. When dealing with silicosis, Dr. Watkins-Pitchford again emphasises the fact that this condition does not necessarily take any share in terminating the life of an affected individual, danger arising only from the predisposition established by silicosis to tuberculous infection. The care taken to eliminate the possibility of tuberculous infection being present among those employed is an important consideration when we consider Dr. Watkins-Pitchford's proposition that, contrary to our preconceived ideas, employment in the gold-mines at the present time does not specially increase the liability of miners to ordinary pulmonary tuberculosis. Silicosis, however, continues to occur, although the period of employment before it becomes manifest is gradually lengthening. At present the mean age at which the disease was first detected works out at 41·3 years.

An important new factor is being introduced into the classification of cases at the periodical examinations of the workers. Previously the stages recorded have been those of primary and secondary silicosis, these stages having reference to the category of the men for purpose of compensation. About a year ago, however, a new group was recognised entitled the ante-primary stage, which is made up of those showing the earliest detectible specific physical signs of the disease, quite apart from whether the condition in any way limits capacity for work. Dr. Watkins-Pitchford considers that the type of the disease now encountered has become for various reasons less severe; at the same time the proportion-rate of silicosis shows an increase. One possible reason for this increase has been the rejoining of miners who were absent on war service. Many of these men on return were found during their absence to have developed silicosis in the primary stage; hence the conclusion is drawn that there may exist a preliminary, latent, and unrecognisable condition from which silicosis may evolve, even though the individual may be completely removed for some time from the injurious influence of inhaling the silica dust. While there has been progressive improvement with regard to elimination of the dust risk, this improvement has not as yet manifested itself among the men working as machine-drillers. But, in a condition which takes so long to develop, years must elapse before improvement in processes with diminution in risk can be expected to become manifest in health records. Some interest attaches to previous employment; no evidence is found that previous work in coal-mines had any effect in retarding the development of silicosis. On the other hand, the curious fact emerges that men previously employed as tin-miners in Cornwall apparently took longer to develop silicosis than did other new men. The mean length of time for 27 tin-miners was 11 years and 5 months as contrasted with an average of 9 years and 8 months for other employment. Possibly this phenomenon is due to the tin-miners being not only the survivors among tin-miners of their own generation, but being also the offspring of men occupied for generations in mining, who may have been subjected to some measure of natural selection.

The production of the more serious type of case—tuberculosis with silicosis—is found to have undergone an extraordinary decline in the year under review, a decline so striking as to suggest that the incidence of silicosis as a whole is definitely diminishing. Nevertheless, the statistics published show that eradication of the disease is yet far from being in sight. An investigation carried out at certain mines and quarries outside the district of the reef is of interest since in these places the danger of incurring fibrosis of the lungs apparently varies directly with the amount of silica in the rock worked. No case of definite silicosis was brought to light at the Bon Accord Quarry, where the dust conditions could hardly be worse; but the rock dealt with is norite, which contains no free silica. Reference is also made in the report to the health conditions of native and coloured persons employed in the mines. Natives seldom, if ever, remain in employment sufficiently long to contract the disease, since their average stay is probably only about eight months; but what happens to these natives after they have returned home to their kraals is not known.

[1] Annual Report of the Miners' Phthisis Board for the Period ending March, 1920. Union of South Africa, 1921. (U.G. 38–'21.)

ENTERIC FEVER CARRIERS.

CARRIERS of enteric fever, as well as of other intestinal infections, are probably more common than has usually been supposed. In this country hitherto only one kind of enteric fever carrier has been generally recognised—namely, the chronic carrier—that is to say, a person who, having passed through an acute attack of the disease, continues during convalescence and afterwards to pass the specific germs in his excreta. Cholecystectomy has been claimed[1] as a cure for a majority of these cases. Abroad, however, two other varieties of carrier are described: (1) the incubation carrier, and (2) the contact carrier. The former is a person who passes the infecting organisms in his dejecta during the incubation period of the disease—that is, before the onset of any of the usual symptoms, and before there is any indication that an acute attack is impending. A contact carrier is a person who has been in contact with an acute case of enteric fever, but who, although seemingly in good health, is passing the fever germs in his stools. The subject has been recently and exhaustively discussed in a paper read before the Far Eastern Association of Tropical Medicine at the meeting held at Weltevreden, Java, in August last, by Dr. Wm. Fletcher of the Institute for Medical Research, Kuala Lumpur, Federated Malay States. In the paper reference is made to the different opinions held as to the method by which enteric fever bacilli invade the human system. The "English" view, as set out by David Harvey in 1915, is that the germs entering by the mouth gain a footing in the bile-passages, where they multiply and invade the lymphatic system and blood-stream, giving rise then to the acute symptoms. According to this explanation the enteric bacilli would not be found in the excreta until after the constitutional symptoms had developed, and if so, there could be no incubation carriers. The opinion held on the continent of Europe is probably nearer the truth; according to this the specific organisms, after being swallowed, multiply rapidly in the small intestine and are excreted in the fæces; subsequently, the germs invade the blood-stream and give rise to

[1] Medical Science, 1920, ii., 10, and 1922, v. 297.

the usual acute symptoms. That the germs may and do appear in the stools before the onset of the acute symptoms, is maintained by Dr. Fletcher, who quotes a recent instance in his own experience when three dysenteric patients under special daily bacteriological observation were accidentally infected with paratyphoid B. The daily bacteriological examination of the stools, which had been carried out for some time previously, showed that the paratyphoid B germs appeared in the excreta in two out of the three cases some days before the acute symptoms developed; the third patient, though passing the infecting organism in his stools, never developed any acute illness. The detection of incubation carriers naturally is difficult, for unless suspicion is aroused there is not likely to be a systematic daily examination of the dejecta by the bacteriologist.

Contact carriers are regarded by Dr. Fletcher as being of special importance in the epidemiology of enteric fever, because they extend the range of an epidemic by conveying the infection to other persons, and also because they help ultimately to limit the duration of the outbreak by the production of an immune population, each contact carrier having presumably passed through a symptomless infection and acquired in this way some degree of immunity. Dr. Fletcher, while admitting that the virulence of the infecting organisms from chronic carriers is as great as that from acute enteric fever cases, suggests that possibly the strains of infecting organisms derived from transitory carriers are diminished in virulence; if this be so, the decline of an epidemic may be explained not only by the immunity produced in contact carriers themselves but also by attenuation in the virulence of the infecting germs. Experience has shown that seasoned laboratory workers and the permanent residents in enteric fever endemic areas are rarely infected. In such instances, Dr. Fletcher points out, immune bodies can be demonstrated in the blood; probably those that have not suffered from a typical attack have been immunised by becoming transitory contact carriers. It is usually the newcomer to an infected district, the new worker in the laboratory, or the stranger, coming in contact with a chronic carrier, who falls victim to enteric fever. Apart from enteric fever, it is now generally recognised that in some other infectious diseases, particularly in diphtheria and cerebro-spinal fever, contact carriers are by no means uncommon.

MECHANISM OF BIOCHEMICAL OXIDATION.

SCIENTIFIC theories, while still progressing, not infrequently throw a somersault or two, by way of showing their vitality. Theories of combustion and tissue oxidations, the foci of chemical and biochemical investigations, have thus demonstrated their pliability in the past, and are in the act of repeating the performance. Chemical theory has just settled down for the moment after a revolutionary jump, and the recent important work of Prof. F. G. Hopkins on glutathione in the *Biochemical Journal* (1921, xv., 286)[1] which formed the subject of his Herter lecture last year, points to the probability of a similar excursion in biochemistry. The story has a long and intricate history, but briefly the new doctrine is that the active element primarily concerned in the mechanism of biochemical oxidations is not oxygen, but hydrogen, and that water plays an important part in the intermediary processes of oxidation in the tissues, as is now proved to be the case for inorganic oxidations. The mechanism of these oxido-reductions is that a substance first combines with water, forming an unstable hydrate; by the agency of a catalyser, hydrogen is now split off from the hydrate, and transferred to some easily reducible body, known as a hydrogen acceptor, while the substance originally hydrated is now left in an oxidised condition. The process would, however, soon come to an end by the reduction of all the available hydrogen acceptor, unless there were some way of restoring it to the oxidised state, so that it can again take up more hydrogen; this could happen on contact with atmospheric oxygen, if the reduced hydrogen acceptor were auto-oxidisable. In such a case, then, the free oxygen which is used is employed merely to re-oxidise the hydrogen acceptor, and not fundamentally for the tissue oxidations at all; the amount of free oxygen consumed is, however, just the same as if it were used directly for the purpose of tissue oxidations. The difficulty encountered by such a theory applied to biological oxidations was that no such hydrogen acceptors had been definitely identified in animal tissues, though evidence had accumulated pointing to the possibility that some substance containing sulphur might be the hydrogen acceptor in question. Prof. Hopkins has definitely isolated this substance, which he calls glutathione, and has studied some of its more important properties. Glutathione is a dipeptide, containing glutamic acid and cystein; it is present in minute amount (0·01 to 0·02 per cent. of fresh tissues), and is only to be extracted with considerable labour. It is auto-oxidisable by exposure to air, especially in faintly alkaline solution; when the reduced form passes into the oxidised form, two molecules link together by the joining-up of two –SH groups to form a –S–S– group, its molecular weight being then approximately doubled. Since it can be both reduced and oxidised under appropriate conditions in the tissues, there is little doubt that it is one, perhaps not the only one, of the group of compounds capable of acting as hydrogen acceptors, and thus of playing a most important part in the dynamics of tissue respiration. The fact that it is present only in minute amount is not opposed to this view; it is only needed to carry hydrogen, and the amount it carries depends on the velocity with which the transfer takes place as well as on the mass of the carrier. Glutathione is, however, present in greatest amount in those tissues which carry out active oxidations. If we suppose that a substance B is to be oxidised, and if we call the reduced dipeptide form of glutathione R–SH, then we can represent the way in which the oxidation proceeds under the influence of the tissue enzymes (which have been called hydrogen-transportases) as follows:—

(1) $B + H_2O = BH \cdot OH$ (formation of hydrate).
(2) $BH \cdot OH + R\text{–}S\text{–}S\text{–}R = BO + 2R\text{–}SH$.
(oxidised form). (reduced form).
(3) $2R\text{–}SH + O = R\text{–}S\text{–}S\text{–}R + H_2O$.

The final result being that one atom of free oxygen is used up, and the substance B is oxidised to BO. Since the glutathione acts by facilitating the action of a tissue enzyme it is regarded by Hopkins as a co-enzyme. It is difficult, at such an early stage, to form an adequate idea of the importance of this discovery; that it will revolutionise our ideas of the mechanism of tissue combustions is certain.

THE RELATION OF GLYCOSURIA AND DIABETES TO EXOPHTHALMIC GOITRE.

IT has long been known that exophthalmic goitre may be associated with glycosuria and even with true diabetes, but the significance of this association is still imperfectly understood. In a report from the Pathological Institute in Christiania, Dr. J. Holst[1] raises the following question: Could not certain advantages be obtained by adding a dietetic treatment to the surgical treatment of Graves's disease, and by adding a surgical to the dietetic treatment of diabetes mellitus? He records 20 cases, illustrating the association of glycosuria and diabetes with exophthalmic goitre, and one of his patients, a peasant aged 42, showed how close this association may be. He had been ill for four years, and he suffered from marked emaciation, great thirst, polyuria, and glycosuria. There were but slight signs of goitre; tremor and cardiac symptoms were, however, demonstrable. Partial removal of the thyroid was effected in two stages, after which the patient's weight increased from 45 to 90

[1] THE LANCET, 1921, ii., 659.

[1] Acta. Med. Scand., 1921, vol. lv., No. 3.

kilos in the course of a year. Thirst and polyuria ceased, the sugar disappeared from the urine, and after three and a half years, during which his diet was unrestricted, the urine was found to be still free from sugar. Before the operation he had been confined to bed, whereas on re-examination he was fit for work. It follows from this and similar cases that every case of Graves's disease should be examined for glycosuria, and every diabetic for signs of Graves's disease. If sugar is found in exophthalmic goitre, a strict diabetic diet should be enforced before operation, and this should be deferred till the urine has become free from sugar and ketone, and, if possible, the sugar content of the blood has also become normal. When a diabetic patient shows signs of hyperthyroidism, reduction of the thyroid by operation or the X rays should be considered, and, according to Dr. Holst, mild forms of thyroid diabetes or glycosuria should undergo operative treatment. In the more severe forms the immediate danger of an operation is, of course, considerable. There is, however, reason for believing that the modern dietetic treatment of diabetes may reduce this danger so that an operation is no longer absolutely contra-indicated. In connexion with nine cases of Graves's disease associated with changes in the pancreas, Dr. Holst enforces his plea for the surgical treatment of diabetes with the following considerations: Hypofunction of the islands of Langerhans leads to diabetes; proliferation and hyperfunction of these islands follow the partial removal of the normal thyroid. In consequence of the modern dietetic treatment of diabetes, the immediate danger of an operation on the thyroid need hardly be greater in a case of diabetes than in one of Graves's disease. Some of Dr. Holst's arguments in favour of partial removal of the thyroid in the treatment of diabetes seem cogent, but nothing can be said with absolute certainty about the practical result of the operation proposed till it has been tried in several cases of diabetes.

GAMASOIDOSIS.

UNDER the name of gamasoidosis or dermatitis due to the fowl mite, *Dermanyssus gallinæ*, Dr. Nixon Toomey,[1] dermatologist to the Terminal Railroad, Missouri, describes a disease which is not only of practical interest to the poultry raiser and pigeon fancier, but is also of interest to the medical historian, as being the disease from which the old notion of a morbus pedicularis partly originated, though the majority of such cases were probably examples of myiasis or pediculosis. Gamasoidosis is confined to those who handle chickens, pigeons, or other birds, or are employed in cleaning out fowl coops. All ages are susceptible, but almost all the reported cases have been in women. The *Dermanyssus gallinæ*, which is a minute mite measuring about one-twentieth of an inch, is like other bird mites a nocturnal marauder. During the day the parasites hide in the dark crevices of chicken-houses, or about the nests and cages, where they lay myriads of minute eggs, and at night attack the poultry, especially the younger birds. The affected fowls suffer not only from the extreme irritation and annoyance of the attack, but also from the loss of a considerable quantity of blood. Prolonged infestation produces a progressive emaciation which may prove fatal. According to Dr. Toomey the chicken mite is one of the worst enemies of the poultry raiser in the Southern States and in California, and is obviously a serious pest in other parts of the world, especially in hot climates. The dermatitis in the human subject is mostly distributed over the dorsum of the hands, the wrists, and forearms, and rarely between the fingers. On the forearms the lesions, which may or may not be symmetrical, are usually more marked on the ventral than on the dorsal surface. The next most frequent site is the neck and exposed parts of the breast, back, and shoulders. The face, scalp, and other hairy regions are also commonly involved. A more generalised distribution is unusual. The mites are sometimes visible on the human skin as minute darkish points, especially after the patient has perspired freely. They do not burrow into the epidermis, but become lodged in the sweat ducts and sebaceous glands where they give rise to an erythemato-exudative papillitis. Pruritus of varying degree invariably occurs, and the skin feels dry and harsh, as vesicles and blebs do not occur. Spontaneous recovery takes place in most cases in from 10 days to a fortnight, and even in the worst cases in about a month, except in the molluscoid type, where the lesions persist indefinitely. The application of a 1 per cent. phenol solution as recommended by Heinicke, or sulphur ointment, should be avoided, as they are both liable to give rise to severe dermatitis. A bland antipruritic ointment containing an efficient parasiticide is all that is required.

[1] The Urologic and Cutaneous Review, December, 1921.

OLDEN TAUNTON.

Dr. Henry Alford has spent practically his whole life in Taunton, and as he was born in 1836 he can look back over at least 75 years with vivid remembrance.[1] He was appointed medical officer of health in 1873 when, to put it mildly, the sanitary condition of the town was not what it ought to have been, though it was probably no worse than that of many other towns in the country at that date. In early days Taunton consisted of five streets, for each of which an alderman was responsible who kept a list of the inhabitants and reported nuisances to the Court Leet. Other officials more or less concerned with the condition of sanitary matters in the town were searchers of leather, a Cornhill keeper, searchers of green skins, a shamble keeper, ale tasters, and "rhine ridders," which last we imagine to have been officials whose duty it was to see to the cleansing of the "rhines" or drainage channels of the fen country around Taunton. Every reader of Macaulay will remember the Bussex Rhine on Sedgemoor, which was one of the causes of the rout of Monmouth's army. To come to more modern times, Dr. Alford tells us that when he was appointed medical officer he analysed the town water-supply and found it "in nearly every instance polluted with sewage." New water-works were begun in 1877 and extended from time to time, so that since 1898 the town has had an excellent supply. Housing and drainage conditions were bad, floods frequently occurred, and small-pox, diphtheria, and typhoid fever were common and fatal. Isolation, sanitation, and vaccination have now reduced the incidence of these diseases to a minimum. In the great small-pox epidemic of 1884 there were 230 cases, and "all the fatal cases, and those which had been malignant or confluent (65 in all), had either not been vaccinated at all, or only imperfectly done." Other passages in Dr. Alford's paper deal with political and social matters, and make excellent reading on fashions of things now passed away.

[1] Olden Taunton: Memories of Long Ago. By Henry J. Alford, M.D. Lond. Reprinted from the Somerset County Gazette. Taunton: Woodley and Co. 1921. Pp. 32. 1s.

CHLOROPHYLL AND HÆMOGLOBIN.

OF recent years we have come more and more to look upon the action of vegetables in promoting health as due to vitamins, bodies of which the nature and chemical constituents are entirely unknown. Prof. Emil Bürgi, of Berne, is now pressing the claims to therapeutic value of another constituent of vegetables, and one of which we have some chemical knowledge—namely, chlorophyll. The exact chemical composition is still unknown; probably there are several allied pigmented bodies. It contains no iron itself, but bears some close relation to iron, for it cannot be formed in a plant from which all iron is rigorously excluded. It contains magnesium, and perhaps this metal supplies to the component parts of chlorophyll the same cement which iron is said to give to the

hæmoglobin molecule. Anyhow, phylloporphyrin ($C_{16}H_{18}N_2O$), one of the decomposition products of chlorophyll, has a close relationship to hæmatoporphyrin ($C_{16}H_{18}N_2O_3$), an iron-free decomposition product of hæmoglobin. Going a stage further, hæmopyroll ($C_8H_{13}N$) can be obtained from both. Bürgi claims that chlorophyll may be used beneficially in pure form to aid the manufacture of hæmoglobin in the body.

Two questions present themselves: firstly, why should chlorophyll succeed better than hæmoglobin, of which numerous preparations are already on the market? And secondly, why is it necessary to pay for a pure drug when we have so many green vegetables around us which contain a cheaper form of that drug? The answer to the first is not apparent, although we ought to bear in mind that we know little of the origin of hæmoglobin. The animal body builds itself up from tissues that are neither too simple nor too complicated. It saves itself from the first by handing over the earlier part of the building-up process to the vegetable kingdom and from the second by breaking up complex bodies to simpler ones in the process of digestion and building them up again to what it wants after they have been absorbed. It may well be, though it has never been proved, that the iron-free compound hæmatoporphyrin is derived from phylloporphyrin, and that this combines with iron to form the iron-holding hæmatin. Pharmacological work of recent years shows that iron is absorbed in a very simple form, so that hæmoglobin given by the mouth probably has to be well broken down before it can act as a hæmatinic. In other words, we get better results from our iron pill and fresh vegetables than we do from hæmoglobin preparations. Bürgi answers the second question by saying that though vegetables are frequently used in chlorosis and other anæmias, in one vegetable only—namely, spinach—is chlorophyll present in large quantity, and that even in this it is so held up in the vegetable structure as not to be available for its blood-forming function. He therefore recommends pure chlorophyll as a drug—it is prepared under the name phyllosan—and thereby attempts to remove this product from the vague field of dietetics to the more exact one of pharmacology.

The idea is taking; but a large amount of exact clinical work must be done before we can determine whether Prof. Bürgi is right. We imagine—perhaps it is only a fancy—that severe cases of chlorosis are rarer than they were a few years ago. This may be due to the class of people in which this disease occurs obtaining more vegetable food. If phyllosan does turn out to be of the use which Bürgi suggests we have an instance of a well-known natural product playing an important part in the physiology, pathology, and therapeutics of man.

THE CULION LEPER EXPERIMENT.

THE Culion Leper Colony in the Philippine Islands has been in existence for 15 years, and during the period July, 1906, to May, 1921, over 13,000 lepers were admitted, the yearly average being about 780. This leprosarium is situated on a specially selected island, possesses every modern convenience, including a landing-stage and a complete township with schools and theatre. Prof. Jose Albert,[1] writing in the local medical journal, expresses unorthodox views upon its success as an experiment in leper segregation. The hopes which were entertained at the commencement, he says, have been hardly justified by results. Rosenau, in the second and third editions of his "Preventive Medicine and Hygiene," stated that systematic segregation had reduced by 90 per cent. the new admissions to this leper colony, and more recently Leonard Rogers has described it as a "huge success." Albert quotes these statements to point out that they are not in accordance with facts, for a brief consideration of the admissions to the Colony during the 15 years of its existence shows that the figures have remained at much the same level throughout the period, the increase during the years 1908–09 being due to greater activity in the capture of lepers. The only legitimate conclusion to be drawn from these statistics is that segregation has so far not had any effect upon the prevalence of leprosy, a view formerly expressed by Rosenau with regard to the disease in Hawaii. In his recent paper[2] on Leper Colonies and Improved Treatment in the Control of the Disease, Rogers still claims that the leper problem is solved in the Philippines and that the Culion experiment is the greatest advance which has been made in the history of leprosy and one which opens up vast possibilities in the near future. Segregation alone, Albert maintains, cannot stamp out leprosy, improved hygienic and sanitary conditions, by preventing contagion, being more effective. In support of this contention he cites the disappearance of leprosy amongst the descendants of lepers from Norway who had emigrated to the United States. In the former country segregation is not absolute; lepers without ulceration are permitted to go out, and the asylum physicians declare that they have never seen infection by contagion from cases of this nature. Reduction of leprosy in Norway cannot therefore fairly be attributed to segregation alone; lepers can remain at home wherever it is shown that their dwellings possess the necessary conditions, a point which is left to the authorities to decide. Wherever rigid isolation is enforced the coöperation of the people tends to be lost, as has happened in Hawaii, and may now be taking place in the Philippines. The Culion experiment is not based upon our present level of knowledge in regard to the degree of contagiousness in leprosy. Intimate and prolonged association produces infection in a second individual in only about 5 per cent. of cases. Prof. Albert concludes that the present system of rigid segregation of all lepers is unscientific. Rational legislation, he holds, would provide for the detection and isolation of lepers with open lesions and their segregation in appropriate hospitals.

The gist of an incisive article is that the main objective of campaigns against leprosy must be the improvement of the hygienic conditions and habits of the people.

[1] Journal of the Philippine Islands Medical Association, 1921, i., 133.

[2] Intern. Jour. Pub. Health, vol. i., No. 3, 1920.

POST-OPERATIVE EMBOLISM AND INFARCTION.

THE impression left by the discussion upon this subject by the Surgical Section of the Royal Society of Medicine, and reported on p. 78 of this issue, is one of dissatisfaction and disappointment that our knowledge of the questions involved is vague and unsatisfying. And this in spite of Mr. J. P. Lockhart-Mummery's able introduction and an interesting survey of many aspects of the subject by those following him. The importance of the problem is obvious. The surgeon can guard against sepsis, can combat shock, and lessen minor post-operative discomforts, but he is filled with a profound despair when, in spite of all his efforts, the patient suddenly dies at a time when all seems to be going well. If one is justified in speaking of apparently natural phenomena in supernatural terms, then pulmonary embolism in a happy convalescent patient would indeed appear to be an "act of God." The many theories as to the causation of the phenomena only serve to demonstrate our ignorance of the condition. Sepsis, the evidence of which is based upon a temperature which occasionally goes up to 99°F., is hardly convincing as a likely cause, in view of the particularly satisfactory convalescence of most patients; prolonged rest in bed does not seem an adequate explanation when we consider the thousands of chronic invalids who escape the catastrophe; interference with the great venous trunks in the pelvis and elsewhere cannot alone be responsible, or every pelvic operation would be fraught with extreme danger. Most statistics appear to show that in America, where patients are encouraged to get up earlier after opera-

tions, the incidence of the complication is greater; yet massage and exercises whilst in bed are being advised by some experienced surgeons in this country.

If we are to advance our knowledge of the condition we must first accumulate trustworthy data. The subject is worthy of the consideration and investigation of our leading physiologists and pathologists. No one surgeon (we hope) has sufficient personal experience of the complication to enable him to draw very far-reaching conclusions, and knowledge can thus only result from collaboration. The real significance of "ether pneumonia," "massive collapse of lung," and those sudden and painful pleurisies which occasionally follow operation, will probably turn out to be bound up with the presence of small lung infarcts. The action on the blood of normal persons of the administration of the salts of calcium, the citrates, and citric acid respectively should be investigated still more fully. Again, in fatal cases the diagnosis of infarct or embolism must be confirmed by an autopsy before statistics can be regarded as reliable, and this has not always been the rule adopted. The causes of sudden death simulating the symptoms of pulmonary embolism may include cardiac syncope, cardiac thrombosis, cerebral embolism, or a medullary lesion.

From the practical point of view at least one useful point emerged from the discussion (which incidentally was attended by representatives of the surgical staff of nearly every large metropolitan hospital)—the avoidance of undue depletion of the body fluids was recognised. The protest against preliminary purgation and post-operative starvation was timely. The reduction of hæmorrhage during operation to a minimum and the prevention of post-anæsthetic vomiting were also advised. But no methods of prevention of intravascular clotting, and no means of hindering the dislodgment of a clot when such has formed were suggested. Massage and exercises, which may possibly be of preventive value, are dangerous indeed if a small clot has already formed. Since small local thrombi are not easily detected, massage might be carried out on a patient who had such a clot, but complained of nothing more than slight stiffness in the part; disastrous results have thus occurred.

EPIDEMICS, OVERCROWDING, AND MALNUTRITION.

IT is known to every epidemiologist that a vast mass of statistical information is available concerning the actual and comparative incidence and death-rates of various diseases; however the cause and recurrence of epidemics may in time come to be explained, it is already established that death and morbidity rates vary not with the actual density of population per acre, but with the overcrowding of individual houses. An illustration of this fact is supplied by Dr. J. Parlane Kinloch in a communication dealing with the birth- and death-rates in three typical wards of the city of Aberdeen. Of these three wards, Rubislaw represents a better-class population, Torry a working-class community living in modern tenements and in regular well-paid employment, and Greyfriars a poor population occupying more dilapidated properties. Rubislaw and Torry give similar results from a health point of view, with a balance in favour of Torry as regards surplus of births over deaths. In Greyfriars the death-rate is considerably higher. The 1920 figures were as follows:—Birth-rate per 1000: City of Aberdeen, 30·3; Rubislaw, 16·0; Torry, 36·6; Greyfriars, 44·0. Death-rate per 1000: Aberdeen, 14·9; Rubislaw, 11·7; Torry, 13·2; Greyfriars, 19·7. Infant death-rate per 1000 births: Aberdeen, 121; Rubislaw, 70; Torry, 118; Greyfriars, 165. The same proportions are roughly true of the zymotic and tuberculosis death-rates of the city and the three wards. In Aberdeen the deaths in one-roomed houses in 1920 were 25 per 1000, in three-roomed houses 11 per 1000; infant mortality in houses of three rooms and under is more than twice as high as that in houses of five rooms and upwards. The explanation of these figures has in the past been vaguely attributed to the general influences of poverty; these influences, writes Dr. Kinloch, may be environmental, physiological, or both, and the effect of their apparent interference with bodily activity or disease has not yet been proved. The depressant effects of vitiated air mainly depend on interference with the heat regulation of the body; but the results of chilling of local body surfaces and of the effects of noxious effluvia are still unknown. Knowledge is, however, available concerning nutrition. A report issued in 1913 from the Physiological Department of the University of Glasgow showed that labouring-class families, with a regular income of over 20*s.* a week, secured a diet approaching the proper standard for active life, whilst those with smaller or irregular incomes failed to obtain a sufficient food-supply for growth of the body and working capacity; the figures shown in that report do not, however, indicate any correlation between diet and the incidence of disease. The epidemiological influence of nutrition is a subject upon which more information is required.

A RARE GRANULOMA OF THE SCALP.

A RARE form of suppurating and cicatrising disease of the scalp was described in 1907 by E. Hoffmann, under the name of perifolliculitis capitis abscedens et suffodiens, Ruete six years later reporting a similar case and briefly reviewing the only three instances of this disease recorded in the literature. To these scanty references Drs. F. Wise and H. J. Parkhurst[1] have lately added a new one, the case of a man of 27 with a nine months' history of scalp disease which began as a crop of apparently ordinary pustules. When seen by the authors there were between 40 and 50 serous and sero-purulent hemispheric lesions, of a size varying from a pea to a hazel-nut, over the whole of the vertical portion of the scalp. Some of the lesions were isolated and others confluent, many presenting small openings. Numerous sinuses were present, the scalp being extensively undermined over the area affected. The whole clinical picture was unusual, corresponding to none of the many different affections of the scalp except to that described by Hoffman. Smears and sections stained for tubercle bacilli were negative, the patient, however, refusing the tuberculin test. The Wassermann reaction was negative. Sections from an excised nodule showed the structure to be that of a pure granuloma, numerous giant cells being present. The perivascular infiltration consisted mainly of plasma cells with outlying round cells, the giant cells of various sizes and shapes being found in the deeper portion where the tissue had broken down. There was no true tubercle formation such as is seen in lupus vulgaris and other tuberculides, nor were epithelioid or mast cells present. The authors emphasise the marked unlikeness of the clinical picture to other atrophying and destructive disease of the scalp, the photographs reproduced of the macroscopic as well as the microscopic appearances going far to substantiate the claim made for the classification of this disease as a separate entity.

ART IN MODERN MEDICINE.

ART has been defined as applied science, but there is something more than this—an indefinable quality which differentiates, let us say, the good oarsman from the bad, or marks the man who can get the most out of a motor-car or a locomotive, or even an ordinary non-motor bicycle at the least expenditure of his own or the motive power's energy. In something of this fashion Sir Dyce Duckworth construes the Relation of Art to Modern Medicine in an article appearing in the *Edinburgh Medical Journal* for December. The best physician is not he who knows all the modern scientific methods in medicine, but he who knows how to apply this knowledge to the patient as a patient and not merely as a case of this or that disease. "Art," says Sir Dyce Duckworth, "must ever be an abiding quality and part of our profession. No progress of pure science can abolish or lessen it

[1] Archives of Dermatology and Syphilology, December, 1921.

for all time. Can we omit to declare that one feature of the *ars medica* is a power to recognise our daily duties as distinctly Christian services, requiring our constant attention to the fact that each patient has an implanted and immortal soul, which cannot live apart from the perishing body?" Plato said the same thing long ago and it is not less true to-day. Not that the claims of science must be set aside, "these must remain and increase and be wisely applied," but the relation of art to medicine "is purely clinical in practice and is only to be acquired and manifested at the bedside." The art of medicine is a gift not possessed by every medical man; like other arts, it can be improved by training and practice, but in the words of Sir William Savory, whom Sir Dyce Duckworth quotes, "It is because medicine is not an exact science that the man of observation and experience has so enormous an advantage over others. . . . ." Modern medicine may be in danger of thinking of herself rather as a science than an art, and it is well that her votaries should be reminded that the art should go hand in hand with the science. The address from which we have quoted was delivered at the opening of the 185th session of the Royal Medical Society of Edinburgh, a great medical centre at which this canon of medical life has frequently been put before the student since Dr. John Brown, an early member of the society, was fond of describing art in medicine in the terms of Bewick's tail-piece—the strong blind man on whose shoulders the lame and seeing man was crossing the river.

GASTRIC AND DUODENAL ULCER.

ULCERATION of that part of the mucous lining of the alimentary tract whose contents are normally acid has long been an interesting pathological problem. We publish to-day two contributions to the knowledge of ulcer in the stomach and 12-finger gut. Dr. Donald Paterson discusses the occurrence of duodenal ulcer in infancy; some 100 cases of this rather rare condition have been reported, Dr. Paterson contributing descriptions of two which have recently come to his notice at the Hospital for Sick Children, Great Ormond-street. He thinks that the condition would be more frequently discovered if search were made at every autopsy; that only five cases have been reported in the British Isles is suggestive in this respect, and we feel that all babies dying of marasmus or melæna neonatorum should be very carefully examined for the presence of such lesions. But the chief interest of the condition lies in the evidence which it offers of the infective nature of such ulcerative processes. Miliary tuberculosis, septic infection of superficial burns, gastro-intestinal infection,—these, combined with the lowered general resistance of the marasmic infant, are the important factors in the production of the condition; and they provide strong clinical support to the theory of septic thrombosis as the origin of gastric and duodenal ulcer, a hypothesis which has received experimental support from the work of Rosenow and others.

Prof. Knud Faber, of Copenhagen, calls attention to the distinction, as regards symptomatology and prognosis, which exists between ulceration in the juxta-pyloric region and that occurring in higher portions of the stomach. In nearly his last work Albert Mathieu severely criticised the English profession for their ignorance of continental work; his opinion would, we feel, have been greatly changed had he been able to foretell the work of Moynihan, Bolton, Hurst, and many other recent workers on the subject, but it nevertheless seems probable that we have not even yet called sufficient attention to the importance which attaches to the mere position of a gastric ulcer. Prof. Faber brings out very clearly the different frequency of incidence in the sexes, and dwells upon the comparative insignificance of symptoms when the ulcer is in the body of the stomach; his figures as to cicatrices found post mortem suggest that in the latter situation there is a far greater tendency to spontaneous healing. That such is the case is somewhat consoling, for in the experience of most physicians and surgeons no ulcers present such difficulties as the large chronic ones high up on the lesser curvature. Despite the brilliant success which has been recorded in some cases of partial gastrectomy, these cases as a whole remain a therapeutic problem; when treated by gastro-enterostomy the results have cast discredit upon the operation; the frequent absence of hyper-acidity in the condition renders them inappropriate cases for treatment on ordinary medical lines. Earlier diagnosis of ulceration of the lesser curvature of the stomach should diminish the number of these chronic cases, and it is on account of the help which it affords towards recognition of these obscure symptoms that we feel Prof. Faber's communication to be a timely one.

INFLUENZA.

A MILD form of influenza is prevalent throughout the country. The symptoms are sudden in onset and primarily catarrhal in nature, though the region first to be inflamed is variable. While in a small number of cases nausea and vomiting usher in the disease, in the majority an initial malaise accompanied by head-ache is the first experience to be recorded. There follow general pains, pyrexia, sore throat and cough, scanty expectoration, often pleuritic friction without serious lung complications or cyanosis, and in most cases a short course followed by rapid convalescence. The mortality in young adults is not high. An unusual rash is reported from some parts of the country and pain and weakness in the lumbar region from other districts. We have nothing to add in the way of prophylactic recommendations to the measures now generally familiar except to ask responsible organs of public opinion not to lay undue emphasis on the ravages of the epidemic or to insist on preventive means whose value has not been definitely established. Such action tends to create an atmosphere of uneasiness and dread in individuals which is in itself one of the more potent predisposing causes of infection.

THE REDUCTION OF UNIVERSITY GRANTS.

THE Universities of Birmingham, Durham, Leeds, Liverpool, Manchester, and Sheffield have addressed a joint letter to the Prime Minister urging on grounds of national importance the danger of any reduction in the grants now made by Government to themselves and similar institutions. The letter is signed by the Principal of the University of Birmingham, and by the Vice-Chancellors of the other five universities, who point out that in all the seats of education the need for economy has been recognised, outlay closely restricted, personal sacrifices made, and needed developments foregone, while the enormous responsibilities of these institutions towards the development of the country are eloquently set out. "The Universities," they say, "hold the keys of the future," and as they have made every effort of self-help, and in this have been loyally supported by the students and their parents, as well as by private and public benefactors, and by local authorities, to fetter such energy will be lamentable. The letter says:—

(*a*) We have practised severe economy in all structural expenditure and in the maintenance and equipment of laboratories.

(*b*) We have raised the fees for courses of study and for examination by considerable amounts. This can only be justified as an emergency measure. About a third of the total income of our universities comes from students' fees.

(*c*) We have collected from private benefactors during the last three years £1,175,000 for the maintenance and, where necessary, the development of the universities.

(*d*) The local authorities of our areas have supported us by increasing their annual grants from £74,268 to £135,868.

The Government urged the universities to make the efforts which have led to this measure of success by encouraging the hope that what was raised locally would be met by a corresponding increase in Government grants, and retrenchment in the present grant would stultify all the efforts of the past, would threaten seriously existing work, and would prevent

all developments in the future. The Universities of Oxford, Cambridge, London, Bristol, Wales, Glasgow, and Aberdeen have since expressed to the Prime Minister their full concurrence in these views, and having regard to the fact that the faculties of medicine would be especial sufferers under the contemplated policy of economy we trust that the petition will find a listening ear. Principal L. P. Jacks well stated the reason for listening in a recent lecture at Bedford College. "Side-track the Minister of Education," he said, "and your State, no matter how strongly defended by armies and navies, no matter how great in revenue and resources, will become rotten."

SQUAMOUS CARCINOMA OF THE BLADDER.

ACCORDING to Dr. Frank Hinman and Dr. Thomas E. Gibson,[1] of the Department of Urology of the University of California, San Francisco, who report three personal cases, squamous-cell carcinoma of the bladder is a comparatively rare disease, of which they have collected only 90 examples, including the cases under their own care. In Buerger's series of 138 bladder tumours 52 were carcinomata, of which 5 were of the squamous-cell type, giving a proportion of 10·4 per cent. In Frisch's series of 300 bladder tumours 107 were papillomata showing cancerous degeneration on serial section, 65 were papillary carcinomata, and 28, or 7·1 per cent., squamous-cell carcinomata. The causation of these growths has been variously assigned to an ascending epidermisation (Marchand), an ectodermal embryonal inclusion in the vesical wall (Albarran), a carcinomatous degeneration of pre-existing leucoplakia (Hallé), or, as the present writers hold, to a leucoplakia malignant in character from the first. Definite proof in support of these theories appears to be absent, except in a few cases where the growth seems to be the result of malignant degeneration of pre-existing leukoplakia. The writers describe two types of squamous-cell carcinoma in the bladder—namely, a tubular type or non-cornifying epithelioma, and a lobular type or cornifying epithelioma. Although the squamous-cell type is the most malignant form of vesical carcinoma, metastases are uncommon, having been reported in only three cases. The cause of death is usually infection, hydronephrosis, or cachexia. The disease is commonest between the ages of 40 and 50, and approximately three-quarters of the cases occur in males. The symptoms are not characteristic. In some there are no prodromal symptoms except hæmaturia of short duration. In one instance the patient had some chronic cystitis which lasted for 24 years. Of the 32 cases in which the treatment was stated, it was palliative in 11 and operative in 21. Of the three cases reported by the writers, in all of whom radical operation was performed, one was living and well three years after operation, the second 10 months, and the third three months.

THE Minister of Health has appointed a Committee, consisting of Sir Cyril Cobb, K.B.E., M.V.O. (chairman), Dr. R. Percy Smith, Dr. Bedford Pierce, with Mr. P. Barter, of the Ministry of Health, as Secretary, "To investigate and report on the charges made by Dr. Lomax in his book (The Experiences of an Asylum Doctor) and to make recommendations as to any medical or administrative improvements which may be necessary and practicable in respect of the matters referred to by Dr. Lomax without amendment of the existing lunacy laws." The Committee will ordinarily hear evidence in public and the time and place of meetings for this purpose will be announced in the press; the Committee will, however, reserve the right to hear evidence in private in any case where they consider such a course desirable. The Committee will hear such evidence as is necessary for the investigation specified in the terms of reference; and cannot undertake to hear evidence in regard to the amendment of the existing lunacy laws.

[1] The Journal of Urology, July, 1921.

ADMINISTRATION OF PUBLIC ASYLUMS: "AUDI ALTERAM PARTEM."

WITH this appeal for fair criticism the Mental Hospitals' Association has issued a small pamphlet[1] dealing with the present position in regard to the public mental hospitals and asylums. These institutions have received an unusually full share of criticism in the public press during the last few months, largely no doubt as a direct result of Dr. Montagu Lomax's book,[2] which was reviewed in our columns at the time of its appearance. The pamphlet before us consists of three parts: (1) An introductory section dealing with criticisms levelled against the present-day asylum system; (2) a report of the Lunacy Laws and the treatment of incipient insanity, embodying the views of the Mental Hospitals' Association; and (3) a copy of the correspondence which has recently taken place between the Association and the Ministry of Health on the subject of voluntary boarders in public asylums.

In the introductory section the writers of the pamphlet point out that our public mental hospitals are administered by visiting committees "appointed by and from the county and borough councils," who are responsible to the electors of their constituencies. This point might have been carried even further by emphasising the fact that the members of the visiting committees have no coöpted members, but all are members directly elected to the post of councillors by the ratepayers of the district. The pamphlet gives in some detail the character of the visits of inspection made by the visiting committees, and finally concludes with the statement that "it is the firm opinion of many that the inspection of these institutions is sufficient, and that, indeed, the time of the medical officers and nursing staff could be better employed in discharging their real duties than in increasing the attendance on these many visitors."

A medical officer with experience of inspection in its various forms, whether in public mental hospitals or elsewhere, will doubtless have much sympathy with these sentiments, but the writers of the pamphlet have not quite grasped the point of the public criticisms. It is not the quantity of the inspection which is valuable, but the quality, and above all the spirit of it—that sympathetic insight combined with constructive criticism which is the aim of all true institutional visitation. Similarly with regard to the provision of food and clothing for the patients, the pamphlet remarks, "Let it be at once said that their dietary, before and since the war, has been and is sufficient," and "the vast majority of the patients are infinitely better clothed than they would be if they were not insane and not in an institution." We find in these remarks rather faint praise. A dietary may, indeed, be sufficient and clothing better than it would be if the patient were not insane without reaching a very high standard or providing the psychological value of variety which is often a valuable part of the treatment of the mentally deranged. Anyone who has had experience of institutional life knows that sufficiency is not the crux of this question; it is the utter boredom of the sameness which finally becomes almost revolting.

The second part of the pamphlet, dealing with the Mental Hospitals' Association and its work, we find to be vastly more encouraging than the first part. The advantage of skilled treatment in the early stages of mental disease, the questions of voluntary boarders and out-patient departments, the desire to remove the taint of pauperism, public and private psychiatry clinics are all dealt with in terms of warm approbation, whilst the proposal whereby early treatment centres might be provided offers, to our minds, a most useful field for advance. This proposal is that "seven or eight hospitals situated as near as possible to populous centres, in which are conducted good

[1] Thirty Years' Administration of the Public Asylums in England and Wales, by the Mental Hospitals' Association. Hodder and Stoughton. Pp. 29. Price 6d.
[2] THE LANCET, August 6th, 1921, p. 292.

general hospitals with medical schools attached thereto, might be evacuated, and could then be set aside and used in conjunction with and as part of such general hospitals for the treatment of mental ailments *free from any connexion with the Lunacy Laws*." The italics are our own, but we believe they underline by far the most valuable suggestion in the whole pamphlet.

The third section, chiefly comprising a long letter to the Ministry of Health, makes out a good case for admitting the voluntary boarder to the public mental hospital. Such a course would, to our minds, be all to the good, provided adequate safeguards were made for the event of subsequent certification where it became necessary.

In conclusion, we welcome this small pamphlet. We wish that some of the criticisms of the public press had been dealt with in more detail, but where reply has been made it is dignified and restrained. The reforms advocated appear to us to be on right lines, and will doubtless give a helpful impetus to the Conference called to discuss this subject by the Board of Control on Jan. 19th.

INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Infant Mortality in India.

IT is noteworthy that while there has been a material decrease in the rate of infantile mortality in Delhi, a large increase has taken place in the rate in Calcutta. In his report, issued recently, the health officer of the Delhi Municipality stated that the infantile mortality in 1920 was 232 per 1000, compared with 268 in 1919, and is the lowest ever recorded. The maternity and infant welfare schemes in operation in Delhi City, he affirms, are entitled to a considerable share of credit for the improvement. The figures for Calcutta, on the other hand, show that the infantile mortality rate in 1920 was 386 per 1000, as compared with 357 per 1000 in the previous year. This, the medical officer of health considers, is in part due to defective registration, but, he adds, that after every allowance has been made for that factor, there has been a very serious increase in the mortality rate. Poverty, bad housing conditions, overcrowding and underfeeding, child marriage, and the purdah, play an important part in undermining the health of the mother with the result that a large number of weakly and immature babies are born only to die. "Dirty midwifery" is another cause of the high death-rate among newly-born infants. The maternity centres in Calcutta have done most valuable service, but unhappily the opposition offered to health visitors by many people of the poorer classes is still a serious obstacle.

Medical Relief and Sanitation.

Early in November the fourth of the group Local and Municipal Conferences was held at Saidapet. The following extract dealing with medical relief and sanitation in rural areas is taken from the address given by Dewan Bahadur V. K. Ramanujachariar, chairman of the conference:—

"Under the head of medical relief a great deal is being done by local bodies. In municipal towns there are well-equipped hospitals and one or two dispensaries in addition. There are also private medical practitioners trained at the Medical College. But the case of the rural tracts is entirely different, they are at great distances from towns, and the roads are, as in the case of deltaic districts, not convenient. The Tanjore District Board, for instance, has opened 31 rural dispensaries, but this is found insufficient. The proposal was made to start itinerant dispensaries to afford further medical relief. In an itinerant dispensary the medical officer stays one day in the week at headquarters, and on each of the remaining days visits a place within a radius of five miles and dispenses medicines. A district medical and sanitary officer observed that flesh and blood would rebel against such an arrangement. In addition to being so inconvenient for the medical officer himself, the system will never become popular, as no person suffering from disease will be satisfied with weekly visits of a medical officer. The only remedy therefore is to tolerate and encourage the indigenous Ayurvedic and Unani doctors, who, though spoken of as quacks, are yet doing useful work. Whatever the advance made in the spread of the Western system, the indigenous systems can never be extirpated. Local boards should, in my opinion, accept this fact, and arrange to improve the Ayurvedic and Unani doctors by compelling Government to give them some kind of training and to subsidise them. Fortunately, the Local Boards Act, as now passed, enables local bodies to do so, whatever the surgeon-general with the Government of Madras may say. And even Government have no power to interfere with any provision which they may make for this purpose in their budgets.

Perhaps the most unsatisfactory portion of the work of local boards relates to sanitation. A sanitary assistant to the D.M. and S.O. is no doubt employed, as also are a number of sanitary inspectors. They tour through the villages and submit reports, but the measures recommended are almost impracticable. . . . What the sanitary officer should do is to educate the people, staying in the village for a day or two, pointing out defects and demonstrating them with the help of a magic-lantern. By these means the sanitary conscience of the people would be quickened. In cases of outbreaks of epidemics, the sanitary inspectors no doubt work together to stamp out the disease; but more organisation is necessary and they should be controlled by a body, which would be respected by local boards and municipal councils. A district health committee will be a proper body to do this work, and no time should be lost in starting one and giving it sufficient power."

At the Saidapet Conference, as also at the Coimbatore Local and Municipal Conference for the western group of districts, the following resolutions were unanimously passed:—

1. That medical relief in rural areas be organised on the following lines: (*a*) Base hospitals in important *taluk* centres with one or more itinerant medical men allotted to them going round a definite itinerary every week; (*b*) closure for a few days in the week of dispensaries which do not get an adequate number of patients and sending the medical man or men out during these days to do a definite itinerary; (*c*) aiding registered medical practitioners who agree to settle in rural areas.

2. This conference recommends that facilities be afforded in each district for training indigenous midwives with a view to the early introduction of the system of registering and licensing them at least in municipal areas.

The Ayurvedic and Unani Systems of Medicine: A Committee of Inquiry in Madras.

The appointment of this committee has been previously mentioned in a letter from Madras, and further particulars regarding its activities are now available. The committee proposes to prepare: (1) a list of Ayurvedic and Unani institutions in Madras Presidency including those for the treatment of both indoor and out-patients, teaching institutions, and institutions for special diseases like leprosy and tuberculosis; and (2) a list of practitioners in Madras Presidency following or proficient in the Ayurvedic and Unani systems with their qualifications. Special note is to be made of those practitioners, if any, who are trained in the Western system of medicine as well. The committee also proposes to obtain the evidence of practitioners proficient in both indigenous and Western systems, as, for example, Sir Bhalachandra Krishna, L.M. & S., and Dr. Deshmukh, M.D., both of Bombay, and of Mahamahopadhyaya Kaviraj Gananatha Sen, L.M. & S., and Kaviraj Yamini Bhushan Roy, M.A., M.B., C.M., both of Calcutta. From such persons the Committee can reasonably expect a statement of the case, couched in the language of modern science, and calculated to stand modern scientific criticism, and evidence of this sort is particularly desired by the Government. Practitioners of the indigenous systems, with an all-India reputation for their learning and skill, will also be heard, and this is, according to the committee, eminently desirable, "if we may judge from the aristocratic and educated of their clientele as also from the princely fees they command." By the issue of a questionnaire the committee also hope to obtain much additional useful information. Finally, they propose to inspect various institutions—"hospitals, colleges, schools, museums, libraries, botanical gardens and the like where experiments are already in progress in

the matter of affording medical relief and medical education, on the basis of indigenous systems of medicine." First-hand knowledge obtained from such an inspection should be of great value to the committee in its work of laying down the lines of action along which State recognition and State encouragement of indigenous systems of medicine may safely proceed.

The Pondanur Tragedy.

The Madras Government states that it has noticed a report regarding the recent deaths of Moplah prisoners in a train, which report contains the statement that in the throes of asphyxiation several prisoners bit each other so severely on all parts of the body that some dead bodies were mangled beyond recognition and have not been identified yet. The Government has ascertained that this statement is entirely untrue. All the medical officers who saw the prisoners and corpses on the arrival of the train at Pondanur agree that, save for a few slight scratchings, there were no external marks of violence.

INFANT MORTALITY IN NEW YORK CITY:
SOME GENERAL LESSONS.

Dr. E. C. Meyer's study[1] of the factors which have caused the remarkable decline in the rate of infant mortality in New York city should be read by all social and public health workers. The statement is made in the preface to Dr. Meyer's brochure that conditions have been brought about under which infant life is more secure in New York city than in any other great city in the world; a statement implying a saving of some 24,000 infant lives during the year 1915 as compared with 1885. How has this been brought about? Dr. Meyer's analysis of the influences at work is clear and fairly exhaustive; and his caution in drawing conclusions is worthy of imitation by those who are convinced that any great improvement in mortality must be the result of the particular work in which they have been engaged during the period of improvement, without regard to other factors which may have contributed to the same result.

Mortality an End-Product: Relation to Welfare Work.

The thirty-one-year period 1885 to 1915 was made the subject of study, with a view to ascertain and, so far as practicable, to identify those infant-life preserving forces which came into being during this period, and their relative contribution to the fall in infant mortality. The test of improvement in New York, as in this country, necessarily was reduction of infant mortality. Although such mortality represents an end-product, its reduction remains our best test, not only of the saving of the lives of sick babies, but also of keeping babies well. How to relate this to the special varieties of infant welfare work in the city formed an almost insoluble problem, owing to the lack of adequate records of the work of the various agencies concerned. The work of the Bureau of Child Hygiene, one of the nine coördinate bureaus of the Municipal Department of Health, is admirable. It is, however, of comparatively recent date, chiefly from 1912, before which year the work of voluntary agencies overshadowed that done by the city bureau. The wide scope of the work of this bureau may be gathered from the titles of its seven divisions—the divisions of midwives and foundlings, of baby welfare, of institutions and day nurseries, of school medical inspection, of children's clinics, of employment certificates, and of research and efficiency. In addition there are between 350 and 400 child welfare organisations at work in the city under private agencies, each with its own income and managing its own affairs, though to some extent coördinated under the Babies' Welfare Association, which acts as a clearing-house for information, its aim being to "save babies by saving wasted effort."

In 1914 New York city, with an infant mortality of 95 per 1000 births, had not only the lowest rate among the ten largest cities in the United States, but also the lowest rate among the great cities of the world. The tables given by Dr. Meyer show for New York, what is known to hold good in this country, that the reduction in infant mortality is associated with an even greater reduction of the death-rate in the next four years of life, thus illustrating once more the important fact, already demonstrated in English experience, that decrease in infantile mortality means improved prospect of life in later years. The chief factors concerned in the saving of lives are shown in a comparison of the years 1919 and 1885. In 1919 the total number of infant lives saved, as compared with the experience of 1885, was 30,771, of which 2900 were saved on infectious diseases, 10,690 on diarrhœal, 4377 on respiratory, 1513 on congenital, and 11,291 on all other diseases. Here again the lesson is taught which has been repeatedly emphasised in English reports, that infections account for the greater part of total infant mortality; and it is the diseases due to infection which show the greatest reduction in the comparison between 1885 and 1915.

Milk-Supply and Sanitation.

The first step taken in the analysis of causes of improvement is an examination of the milk-supply of New York. Prior to 1896 no general action was taken. Then the licence system was adopted, followed in 1904 by the establishment of a maximum temperature for the transportation of milk, in 1907 by the score card, and in 1908 by regulations as to pasteurisation of milk and its classification into grades. In 1907 pasteurisation of all but special grades of milk was required, and in 1914 this requirement was made universal except for milk from tuberculin-tested herds. Voluntary agencies were at work earlier than official. Nathan Straus had already put into operation six depôts for the supply of pasteurised milk, and its use steadily increased. But as to the closeness of the relation between the use of such milk and the reduction of infant mortality there is much doubt. Those closely in touch with the situation differ widely on this point. Within recent years educational work has been organised at the milk stations and home-visiting nurses have been provided; but in the earlier years, when infant mortality was also declining, this educational work was on an almost negligible scale. Municipal sanitation was improving during the same period, and in recent years admirable work has been done, directed towards the control of disease due to congenital causes.

The Racial Factor.

The experience of New York is complicated by the altered race constitution of its population. The foreign-born population of New York increased between 1900 and 1910 from 1¼ millions to nearly 2 millions. Dr. Guilfoy's official statistics for the city show the importance of this fact, for in the year 1915 the infant mortality for all infants was 98 per 1000 births, varying from 65 for infants of Swedish nativity, 78 for Russo-Polish infants, 80 for Austro-Hungarian infants, to 103 for Italian infants, 119 for Irish, 116 for German, and 138 for English infants. There can be no doubt that the great increase in the Slavonic and Jewish population has been to some extent responsible for the fall in infant mortality in New York city. To discuss whether this is a real racial difference, or whether it is due to variations in infant care or in tolerance of altered climatic conditions would carry us far afield, and Dr. Meyer has not essayed any explanation of these important facts.

Effect of Intensive Work on Infant Mortality.

The second part of the report is occupied with a careful analysis of specialised infant welfare work in New York. Dr. Meyer judiciously emphasises two points: first, that much of the improvement in infantile health has been caused by efforts outside the scope

[1] Infant Mortality in New York City. By Ernst C. Meyer, Ph.D., Director of Surveys and Exhibits of the International Health Board, Rockefeller Foundation.

of infant welfare organisations, and that it is "impossible to dissociate by means of statistical processes the efforts made by child-welfare organisations from those made by other agencies in such manner as to bring out the achievements in infant-life saving accomplished through either group." This being so, the attempt was next made to ascertain the actual mortality rate in a given year among infants cared for at baby health stations during the period of care only. The infants reached by these organisations numbered 27 per cent. of the total infant population of the city in 1915, and in the areas concerned the infant mortality rate among enrolled infants was 41, among unsupervised infants living under similar conditions 117 per 1000. But the first group comprised infants whose average age at the time of enrolment was 4½ months, while the second group comprised infants aged 1 day to 1 year. The process by which Dr. Meyer makes the necessary correction for age-distribution involves assumptions which appear likely to be correct, though this may be doubtful. For a study of this point reference must be made to the original report. If these assumptions be allowed, then it follows that the corrected infant mortality among the cared-for was only half that of the rest of the population.

In this article we have only indicated some points of outstanding interest. The chief merit of the report consists in the fact that statistical difficulties of comparison are honestly faced, and if inconclusive results are thus obtained this is better than a too roseate statement of possibilities. From this standpoint the report deserves careful study by social and public health workers, as also for the wise view expressed that the analysis of the special work done in New York shows "the significance of carrying out the larger phases of sanitary problems while the smaller intensive objectives of infant-life saving are being planned." Hence, while pursuing the specialised work which appears to be necessary to enlist public support, it is reasonable to ask, as Dr. Meyer asks in the concluding sentence of his report, "May not a community which, like New York, has proceeded beyond the stage of sanitary neglect, find that the direction of effort to a larger purpose is the quickest means of reaching the particularised goal"?

Public Health Services.

MEDICAL BENEFIT IN THE NEW YEAR.

THE newly-constituted insurance committees have been appointed and have now commenced their work. There appears to be little evidence of serious defection from the panel lists, and the fears so freely and influentially expressed that experienced and highly qualified doctors would withdraw altogether from insurance practice have not been realised. This is no little relief to those who desire that the efficiency of the medical service should be maintained. Limited as medical benefit at present is to general practitioner services it is the more vital that those services should be of the best, and the success of the service depends largely on the personnel of the men in it. The present system of medical benefit has come to stay precisely so long as insurance practitioners make it a real success. If and when it fails, the Government would be compelled by pressure of the approved societies to institute an alternative system which would tighten up control, and might conceivably take the form of a salaried State service. Believing as most fully informed practitioners do that this would be bad for practitioners and insured, and at the same time fail to relieve the financial burden in that the cost of administrative machinery would be added to that of medical benefit, we regard as the more rational and economic method to build upon and improve the present system. Dental treatment, already available in a few societies, should be provided for every insured person. Medical benefit should be extended to include the services of specialists and consultants, and the provision in hospitals of any needful surgical treatment. Steps already noted have been taken by certain approved societies which contribute towards the voluntary hospitals and the district nursing associations, which are such a boon to the sick in their own homes. Slowly but surely the goal of a complete medical service is being reached.

Purging the Panel Registers.

The Insurance Committee for the County of London recently had before it some instructive figures from the registers of insured persons. The number of insured persons represented by index slips in index register varied in the different quarters of 1921 from 2,047,692 to 2,039,872. On the other hand, the number of insured persons credited to practitioners varied during the same time from 1,578,358 to 1,608,552—a discrepancy of about 430,000. Under 4000 individuals are entitled in London to make their own arrangements with doctors, so that the bulk of the 430,000 are names representing insured persons who have not come to the knowledge of the doctors. The truth is, of course, that the larger figures are fictitious and merely represent the accumulations of notifications which have not been sufficiently identified and cleared. By the central clearance scheme, set up by the late Insurance Commissioners, the Ministry of Health are engaged in purging the registers of approved societies and insurance committees at no small cost of money. Some system of registration is necessary so long as the capitation method of payment remains in force, for it is part of the duty of insurance committees to supply each practitioner with a list of the insured persons for whom he is under contract to provide medical benefit, and that list has to be revised from time to time. It is an argument for a State salaried service that under it this costly system of registration would be done away, and those who prefer the present capitation method should ensure that the registers are accurate.

Reference to the Regional Medical Officer.

It is important that all friction in the working of the new scheme should be removed as far as possible. Our attention has been called to the fact that when a practitioner refers one of his insured patients to the medical officer of his region for an opinion, the official mind requires the patient to be informed that his doctor has thus referred his case. This not unnaturally leads to trouble, and deters practitioners from making such use of the Form R.M. 7 as they otherwise would be glad to do. The position is complicated by the fact that there is no legal compunction on the patient to submit to the examination at the request of the practitioner, although, if the request comes from the approved society, he is legally bound to submit or take the obvious consequences. Each case must be considered on its merits, but we should think in most cases it would be to the advantage of the practitioner himself to acquaint the patient with the fact that he desired a second opinion and to secure the patient's consent before sending in the application. It is important that any cause of friction should be removed, and in writing to the patient the Ministry is obliged to inform him why arrangements are being made for a special examination.

Employment of Permanent Assistants.

The London Panel Committee has taken up a definite attitude with regard to the use of a permanent assistant. An insurance practitioner, who was responsible for two practices about three-quarters of a mile apart, asked for permission to employ a permanent assistant so that he might reside with his family at Hampstead, about two miles from the practice which would then have no resident doctor. The panel committee advised the insurance committee not to grant the request. There is much to be said for the view that a practitioner should not be obliged to live in the overcrowded and insanitary area in which he may practise, but the present system of lock-up surgeries with no resident practitioner is quite unsatisfactory. The absentee practitioner throws a

great part of the burden of the responsibility for his practice on his neighbours and fails to render a really efficient service to his insured persons under his contract with them. That way leads to scamping and discontent, and there is a better. A group of practitioners might coöperate in the establishment of a clinic with one of their number always in residence; it would then be possible for them all to work in the crowded area and yet reside for the greater part of their time in a healthy suburb.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been made:—Surgn. Lieut.-Cmdrs.: J. D. Murphy to *Montrose*; A. E. P. Cheeseman to *Pembroke*, for R.M. Div., Chatham; and I. S. Gabe to *Verbena* (on commg.). Surgn. Lieut.: W. J. McB. Allan to *Ramillies*, temp.

Surgn. Cmdrs. H. C. Arathoon and H. Spicer have been placed on the Retd. List.

Surgn. Cmdrs. P. H. Boyden, E. S. Miller, R. D. Jameson, J. C. Rowan, C. R. Sheward, J. C. Durston, P. M. May, and H. Hunt have been placed on the Retd. List with the rank of Surgn. Capts.

ROYAL ARMY MEDICAL CORPS.

Maj. F. A. H. Clarke to be temp. Lt.-Col. whilst empld. as Asst. Dir. of Hygiene.

Maj. A. J. Williamson retires on ret. pay and is granted the rank of Lt.-Col.

G. B. Egerton, late Capt., R.A.M.C., Spec. Res., to be temp. Capt.

Temp. Lts. to be temp. Capts.: C. P. Ruel and R. E. Murphy.

J. D. Leahy, late Capt., 4th R. Ir. Fus., Spec. Res., to be temp. Lt.

Officers relinquishing their commns., and retaining the rank of Capt.: Temp. Capts. J. J. Todd, F. E. Johnson, and F. Dallimore.

ARMY DENTAL CORPS.

Lts. (temp. Capts.) to be Capts.: B. E. Gentleman, T. Edwards, J. Morrey, J. Baillie, H. F. Byrne, and H. E. Flavelle.

TERRITORIAL ARMY.

Maj. O. W. McSheehy, R.A.M.C., vacates the appt. of Adjt., R.A.M.C., Schl. of Instn., 1st Lond. Div. (T.A.).

Maj. T. M. Morton, having attained the age limit, is retired and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. G. H. Gill, having attained the age limit, is retired and retains the rank of Capt.

The following relinquish their commn. and retain their rank: Lt.-Col. T. M. Carter, T.D. (Lt.-Col. in Army), Maj. E. McFarlane, Capts. G. C. Owen and D. G. Dingwall, and Lt. O. Jones.

TERRITORIAL ARMY RESERVE.

Capt. J. McG. Deuchars to be Capt.

Maj. (Hon. Surgn. Lt.-Col.) F. V. Adams, T.D., having attained the age limit, is retired and retains his rank, with permission to wear the prescribed uniform.

DEATHS IN THE SERVICES.

Major-General Sir Walter George Augustus Bedford, K.C.M.G., C.B., A.M.S., retired, who died at his residence in Oxfordshire on Jan. 8th, was born in 1858 and was the son of the late Vice-Admiral G. A. Bedford. Educated at St. Bartholomew's Hospital and at the University of Durham, he obtained the M.R.C.S. in 1880 and graduated M.B. in the same year. In 1920 the University of Durham conferred upon him the D.C.L. hon. causâ. From 1894 to 1899 he was a Staff Officer at the War Office and in the latter year served as Staff Officer to the Surgeon-General at the headquarters of the South African Field Forces. For his services he was mentioned in despatches and received the C.M.G. Later he became Principal Medical Officer in South China and subsequently Deputy-Director of Medical Services in the London district. After holding a similar post in South Africa and in the Southern Command in England he was appointed in 1915 Director of Medical Services to the Mediterranean and Egyptian Expeditionary Forces when he was again mentioned in despatches and received the C.B. From 1916 to 1919 he was Deputy-Director of the Northern Command in England, being promoted K.C.M.G. in 1918. He married in 1880 Harriett Adelaide, daughter of the Rev. D. J. Drakeford, by whom he had one daughter.

Correspondence.

"Audi alteram partem."

THE SPAHLINGER TREATMENT.

To the Editor of THE LANCET.

SIR,—As one to whom questions about the "Spahlinger Treatment" had been frequently addressed, I turned with much interest to the paper by Mr. H. Spahlinger in your issue of Jan. 7th, only to find that nothing of importance was disclosed which could throw any light upon the real nature of the new preparations. Every worker at tuberculosis would, I feel sure, welcome an efficient method of treating this terrible disease, whether discovered by a medical man or by a scientist without medical qualifications, but it is a very important essential of our duty to our patients that we should know what it is that we are recommending and how it has been prepared, and the rationale on which its use commends itself to us. Mr. Spahlinger's "passive immunisation" theory depends entirely upon the validity of his claim, clearly expressed in the paper quoted, that "the different symptoms of intoxication are due not to varying manifestations of the same toxin but to different toxins, each of which is separately used in the preparation of a 'partial' serum." He must have devised special methods of his own to isolate these alleged toxins, and these methods must, if sound, be capable of successful application by other competent workers if full details are published. Before it is possible to decide as to the validity of the claims made for the antitoxins advocated by Mr. Spahlinger it is necessary that full information should be forthcoming. What would be the position of a medical man who had administered a dose of antitoxin in a case of diphtheria, the child dying within a few hours through individual and exceptional hypersensibility to horse serum, if he were not able to point to the exact knowledge that we possess about diphtheria toxin and antitoxin, the carefully ascertained results of animal experiment, the wonderful efficiency of the diphtheria antitoxin in treatment, and the proved safety of the method except in an inconsiderable minority of specially sensitive or sensitised persons? Here the slight risk that is inseparable from this wonderful therapeutic method can be confidently faced in the light of full knowledge. It would be unfair to ask Mr. Spahlinger to quote large statistics, such as are available in diphtheria, as his preparations have only been used for a short time and in a small number of cases. What we have a right to expect is that the full details of his technique should be placed before us in order that they may be subjected to competent criticism. Once these details are available the method can be honestly tried and honestly evaluated on the large scale that is desirable and by persons with the necessary training in scientific work. The essential questions that must be answered before it is possible to form any idea as to the Spahlinger anti-sera are briefly as follows:—

1. Upon what experimental evidence is it claimed that ectotoxins are formed or have been isolated from the germ in question, or, in the case of endotoxins, that they have been separated in an available form for the production of anti-sera?

2. *Have the anti-sera been standardised?* If so, what is the method of standardisation of the toxins and antitoxins, and upon what "unit" is the dosage based?

3. What is the exact technique employed in the preparation of each of the toxins and antitoxic sera used?

4. Against how many toxins have "partial" sera been prepared, and under what circumstances are these sera selected for use in individual cases?

There is internal evidence in Mr. Spahlinger's paper that at least 22 sera of one series and at least three of another have been manufactured, but there may be

more, or some of these may have been discarded. As to the "active immunisation" problems, here, too, questions arise, but of a less urgent nature, as this part of the ground has been well explored by others. But in connexion with the "passive immunisation" of which Mr. Spahlinger speaks in his paper, the questions above formulated must be answered before any progress can be made. These questions are formulated in no captious spirit. Without at least so much information it is impossible either to form or express any opinion upon the treatment. As to drawing any practical conclusions from the few cases quoted by Mr. Spahlinger and those already published, a moment's reflection will suffice to show that this is impossible. But on such records very far-reaching claims have been based in the lay press. Mr. Spahlinger's name is already as familiar to the public as that of Georges Carpentier or Mademoiselle Lenglen, but while thousands of sufferers from tuberculosis wait anxiously for the advice of their doctors as to the wisdom of placing themselves under his treatment, the medical profession still remains in the dark as to the nature of the work upon which the Spahlinger treatment is based. I appeal to Mr. Spahlinger in the name of humanity to publish full details of his work in the medical press in order that his researches may be repeated by other investigators throughout the world and either confirmed or set aside.—I am, Sir, yours faithfully,

S. LYLE CUMMINS,
Professor of Tuberculosis, Welsh National School of Medicine, Cardiff.

Jan. 8th, 1922.

THE FIXATION ABSCESS.

To the Editor of THE LANCET.

SIR,—It is interesting to discover in the paper by Major A. T. Todd in your issue of Jan. 7th that the fixation abscess is used so much in France and is of value in certain cases of severe illness (infection). Some of your readers may recall that Huguier (1860),[1] treating cases of uterine prolapse by removal of the cervix (supra-vaginal), strove to limit the extension of the post-operative inflammation by rubbing croton oil into the skin of the legs, outer parts of thighs, and flanks. An extensive dermatitis developed. The idea underlying this treatment was that the constitution, being occupied with this acute and passing irritation, would be diverted from causing a too great inflammatory response in the region of the wound and its extension internally—thus preventing metritis, peritonitis, phlegmon, phlebitis, &c. If of any value, the inunction of croton oil presumably acted much in the same way as Major Todd suggests the subcutaneous injection of turpentine acts—inducing under favourable conditions leucocytosis and possibly phagocytosis. According to Scanzoni,[2] Huguier first amputated the cervix in a case of prolapse in 1848; whether he induced a dermatitis on this occasion I do not know.

I am, Sir, yours faithfully,
R. H. PARAMORE, F.R.C.S.

Rugby, Jan. 7th, 1922.

To the Editor of THE LANCET.

SIR,—In his article upon the use of turpentine in the production of fixation abscesses, Major A. T. Todd (THE LANCET, Jan. 7th) mentions the lack of evidence that any fair trial of the method has been made in this country, and refers to a publication by Dr. H. French, Dr. N. Hallows, and myself, wherein we discuss very briefly our employment of this therapeutic method. Major Todd implies than our scant description suggests that only a lukewarm, perhaps insignificant, attempt may have been made, and I may be permitted a few words in elaboration. Like all other experimental methods of treatment during the great pandemic, the method now under consideration was conducted upon a very large scale. In the hospital to which I was particularly attached nearly 1400 beds were devoted to the treatment of cases of influenza, all of them fairly severe and a considerable proportion of the serious septicæmic type. Correspondingly large numbers were under treatment in other parts of the Aldershot Command, so that our conclusions were based upon a very large number of cases, although I cannot quote actual figures as regards the number subjected to any one line of treatment.

I sympathise with Major Todd's enthusiastic appreciation of a therapeutic measure which appears to snatch from death patients so gravely ill that hope for their recovery was all but abandoned. The same experience was mine in the first case (to which he refers), when the accidental production of an abscess by the intra-mammary injection of saline solution and the subsequent recovery of a desperate case encouraged me to persevere with injections of turpentine and other materials. But whilst failure of a fixation abscess to develop, or having developed to lead to recovery, is no reflection upon its general utility, equally the circumstance of recovery when this treatment has been employed is no guarantee that unmerited credit may not be attributed to the abscess. Nor, *me judice*, can the severity of the condition be any guide. It is, of course, a commonplace that during the pandemic recoveries were witnessed in the most unexpected instances, and that the remarkable successes of certain lines of treatment could be duplicated over and over again by cases equally severe in which no special treatment had been adopted. I recall the curious experience of having *thrice* regarded as hopeless a man who recovered, relapsed, recovered, relapsed, and finally recovered. On each occasion so desperate was his state that I refrained from employing any special treatment under trial, since failure on these particular occasions could afford no indication as to the value of the method. Such a confession is a humiliating index of one's prognostic inadequacy, but it illustrates the impossibility of assessing the value of any special line of treatment. I say this with all deference to Major Todd's opinion as to the likelihood of certain of his cases succumbing had they not been treated in this particular way and his greater confidence in his own powers of prognosing. I fear, too, the drawbacks to the treatment cannot be lightly dismissed. In the large majority of my cases no suppuration followed the injection of turpentine. In three cases a large abscess developed, in two with the formation of an enormous slough practically amounting to gangrene. The latter died; and although the unfortunate sufferers made no complaint (for indeed such patients are beyond the capability of complaining) I could only regretfully conclude that their last hours were rendered more wretched by this additional misery.

I would like finally to state that, notwithstanding a want of enthusiasm regarding my own experiences with turpentine, I cannot but applaud any method which aims at converting a septicæmia into a localised focus of infection. My present communication was encouraged by Major Todd's reference to the work of my colleagues and myself, and I felt that a little expansion of the previous brief report might be of interest.

I am, Sir, yours faithfully,
ADOLPHE ABRAHAMS.

Harley-street, W., Jan. 7th, 1922.

A CASE FOR DIAGNOSIS.

To the Editor of THE LANCET.

SIR,—If you think the following rough notes worthy of publication with a view to any helpful comment from your readers I would be grateful.

Dr. X Y, aged 57, was first seen by me at 9 A.M. on Sept. 22nd, 1921. He was a rather florid, stoutly built, shortish man. He gave a history of acute pain across the upper abdomen, commencing at midnight and paroxysmal in character. He had been perfectly well previously excepting for attacks of intermittent claudication which had gradually become more frequent. There was no history of previous abdominal trouble. He stated that he had vomited freely once and passed a large motion at midnight.

[1] Huguier: Sur les Allongements Hypertrophiques du Col de l'Uterus. Paris, 1860.
[2] Scanzoni: Diseases of Women (Amer. Trans. by Gardner, 1861).

On examination no physical signs were found in the abdomen. There was no distension, and the liver dullness was normal. There was nothing remarkable in the expression of the face, the tongue was clean, temperature 98°F., pulse 84, regular, volume good; tension 160 mm. Hg. During my visit he vomited ("pumped up") about a pint of clear fluid. As he still had acute paroxysmal pain he was given 1 c.cm. omnopon hypodermically.

He was seen again at 3 P.M. and stated that pain recommenced at 2 P.M. The condition of the abdomen was unchanged; he had vomited a little greyish fluid which was not fæcal in character. Per rectum, the bowel was empty and flaccid and not distended; no mass was felt; temperature 98°, pulse 80 and unaltered. 1 c.cm. of omnopon was given. During the afternoon the patient took an ounce of castor oil and had his abdomen poulticed with antiphlogistine.

When seen at 9 P.M. he was still under the influence of the omnopon. There had been no more vomiting and no fresh signs had appeared; temperature 98·8°, pulse 100, but otherwise as before.

On the 23rd a nurse was sent in to the patient at 9 A.M. with instructions to give a high saline wash-out; two pints were given and returned clear. A small soap-and-water enema was then given, and its return was followed by rather more than half a pint of darkened hæmorrhage, which was seen by me. There was no fæcal matter and very little flatus.

I saw the patient at 10 A.M. when he told me that he had been retching continuously and in pain all night. The abdomen was acutely distended and moving rather badly with respiration. The liver dullness was unaltered. There was slight tenderness in the region of the descending colon; no mass could be felt; the rectum was markedly "ballooned" and empty, and no mass could be felt from it; temperature 99°, pulse 156 and regular, volume fair. Tension rather lower than previously. It was suggestive of shock rather than hæmorrhage. At 11 A.M. the patient was seen with me by my partner, Dr. Cedric K. Scales, who agreed with the diagnosis of acute intestinal obstruction and with the necessity for immediate operation.

The patient was removed by ambulance to a nursing home and 1/100 gr. digitalin and ½ gr. caffein given hypodermically. At about 2 P.M., and just before operation was about to be commenced, the patient passed about two pints of dark blood and vomited as much or more and died almost instantaneously. There was time only for a hypodermic injection of camphor and ether.

Autopsy.—Liver: normal. Stomach: a moderate number of adhesions to liver and diaphragm; the organ was distended. Duodenum: entirely bound down by adhesions. Jejunum: about 3 ft. of this purplish and swollen but with no constriction. The affected portion gradually faded off into normal bowel at either end and was not continuous with duodenum. It was not bound down in any way. About the middle 6 in. of the affected portion was intensely congested and felt full and crackled when squeezed between the fingers, like a surgical emphysema. There was a good deal of gas in the lumen of the bowel. When opened the region of maximum congestion contained valvulæ conniventes, which were greatly swollen with gas which could be easily squeezed out of them into the adjacent bowel wall.

The ileum was flaccid, and the colon also flaccid throughout, nothing noteworthy in either region. There was no sign of ulceration or of perforation of the bowel. The mesentery was very greatly thickened and leathery and not twisted—this was of old standing. There were about two pints of blood-stained fluid in the peritoneal cavity; no pus. There was no aneurysm, no mesenteric thrombosis, and no large vessel was involved. The abdominal glands were not enlarged.

The noteworthy points seem to me to be:—

1. The portion of ileum in a condition in general of an intestinal obstruction, but with free gas in the valvulæ conniventes and not in the rest of the mucous membrane. I take it that this gas can have come there only: (*a*) From the lumen of the bowel; (*b*) from the peritoneal cavity; and (*c*) from the blood. The absence of perforation and ulceration is against (*a*) and (*b*), and further, if the gas was from such source one would expect it to be evenly distributed, as also if a gas-producing organism were present. Whereas (*c*) might be as the result of great pressure with gas forced into the most flaccid portions of the mucous membrane—i.e., the valvulæ conniventes. We fully expected to find either an intussusception or a volvulus post mortem, and the only explanation we have—for what it is worth—is that an intussusception actually occurred (the condition of the mesentery was strongly against volvulus) and became righted automatically at the moment when the hæmorrhage occurred just before death.

2. The large amount of old mischief without history. This, however, does not appear to have contributed to the cause of death.

I have found nothing helpful in the literature at my disposal. I am, Sir, yours faithfully,

Cliftonville. J. JEROME SUCKLING.

*** The presence of so much vascular change in a man who had suffered with intermittent claudication suggests arterio-sclerosis with possible thrombosis of the vessels of the affected piece of intestine. An intussusception, which had spontaneously reduced itself, is unlikely in a middle-aged man. Emphysema of the bowel wall might be the result of a terminal infection. But in this interesting case there are many features that invite discussion.—ED. L.

B-VITAMIN AND PIGEON BERI-BERI.

To the Editor of THE LANCET.

SIR,—Two interesting papers in your issue of Dec. 10th, 1921, dealing with some aspects of the B-vitamin problem, lead me to acquaint your readers with the work on pigeon beri-beri which has been in progress for some time at the Institute of Physiology in Zurich. Prof. W. R. Hess is now publishing the results of some of his investigations on the subject at greater length.[1] Dr. Samson Wright[2] maintained the opinion that the symptoms of B-vitamin deficiency were due to absorption of toxic bodies from the intestinal canal produced by stasis owing to the absence of the beneficial action of the B-vitamin on the intestinal canal. Earlier investigations of Abderhalden and Ewald, as well as recent experiments by Messerli at the Physiological Institute here, are in contradiction to this view. Messerli has shown that very small doses of animal charcoal, given by the mouth to adsorb the toxic products and prevent their absorption by the intestinal canal, even precipitate the outbreak of beri-beri instead of inhibiting it.

The experiments of Prof. Hess now throw a new light on the physiological rôle of the B-vitamin. The symptoms of deficiency consist in a reduction of bodily energy, shown by subnormal temperature, lowering of the respiratory metabolism, muscular weakness, and alimentary insufficiency. There is a striking relation between the degree of vitamin deficiency and the severity of the symptoms; even a small supply of B-vitamin is sufficient to remove the symptoms. This close interdependence of the symptoms and the supply of B-vitamin induced Hess to experiment in vitro on the degree of the oxidative processes in the different tissues of beri-beri pigeons. The method employed was the one recently described by Lipschitz, being the reduction with colour change of m-dinitrobenzol to m-diphenyl-hydroxylamin by living tissue. The details of these experiments are given elsewhere; I mention only the following facts:—

The animals were decapitated, the blood washed out with ice-cold Ringer's solution to stop ferment action, the different tissues then cut, and 1 g. of each organ prepared with 10 c.cm. Ringer's solution. To each 0·1 g. m-dinitrobenzol is added, thoroughly mixed and oxygen excluded by nitrogen washing; the tubes are then put in a water bath at 40° C. for an hour. The centrifuged solutions are then controlled by a photometric method, the values giving a measure of the power of the oxidative processes in the different tissues. The results were striking. Oxidative processes were found greatly reduced in every tissue examined of the B-vitamin deficient animals as compared with healthy pigeons.

These results are in accordance with recent findings of Abderhalden, who, however, arrived at no conclusion as to whether the lowering of oxidative processes was the cause of the symptoms of beri-beri. Hess went a step further. He reasoned: if the inhibition of the oxidative processes is the cause of

[1] Hoppe-Seyler's Zeitschrift für Physiologische Chemie, vol. cxvii.

[2] The Effect of B-Vitamin on the Appetite, THE LANCET, 1921, ii., 1208.

the symptoms of avian beri-beri, there must be a possibility of experimentally producing the same symptoms by injecting a substance known to inhibit such processes in living tissues. Prussic acid has a high power of diffusibility, which facilitates its entry into the cells, and it is known to depress the oxidative functions of the individual cell to a minimum in concentrations which have no action whatever on the transmission of the oxygen to the blood.

Experiments were made with intramuscular injection of potassium cyanide into healthy pigeons. Doses of 0·25 to 0·45 g. per 100 g. pigeon weight were given, and all the classical symptoms of avian beri-beri were produced. There was sleepiness, ruffling of the feathers, drunken swaying of the body in standing and walking, dyspnœa, nystagmus, opisthotonos, typical convulsions, and finally complete paralysis.

These experiments give a decisive value to the in vitro findings already mentioned. The evidence furnished by the two series of results together—the reduced oxidative power of the tissues of beri-beri animals and the production of symptoms of the disease by injection of a substance which inhibits the oxidative process—amounts to a proof that the nature of B-vitamin deficiency consists in an inhibition of the oxidative power. The B-vitamin furnishes the structural basis of the oxidative ferments of the body.

All the symptoms of beri-beri may be thus explained. We can account for the subnormal temperature, the lowering of the respiratory metabolism, the muscular weakness, and the insufficiency of the alimentary canal. The convulsions are the result of an insufficient oxidative power in all cells, including those of the central nervous system. This evidence is enhanced by the fact that pigeons fed to some degree on polished rice are more sensitive to prussic acid than healthy pigeons. Beri-beri symptoms can be produced in these birds by injection of even smaller doses of potassium cyanide than those mentioned above.

We know that the oxidative process consists of a series of different phases. The conclusions to be drawn from these experiments do not imply that the whole chain of oxidative processes is injured by B-vitamin deficiency. It is to be assumed that one phase especially is inhibited and that this leads to dissociation of the whole process. We may wonder that an equal depression of all phases of the oxidative process occurring in a starving animal does not give rise to symptoms of beri-beri. In that case there is no disturbance of equilibrium, whereas in the B-vitamin deficient animal the disturbance of equilibrium of the oxidative process is the main trouble. As these troubles are due to the absence of a catalytic agent the administration of traces of B-vitamin is sufficient to counteract them.

I am, Sir, yours faithfully,

W. H. DE WYSS, M.D. Basle,
L.R.C.P. Lond., M.R.C.S.
Physiological Institute, University of Zurich,
Dec. 28th, 1921.

THE WOOD-HILL FUND.

To the Editor of THE LANCET.

SIR,—I am sending you the fourth list of subscriptions to the Wood-Hill Fund. The amount received up to date is just over £800.

I should like specially to direct attention to certain contributions from medical societies, medical staffs of hospitals, &c., which have greatly helped the Fund and which serve as examples of what might be done by similar bodies of practitioners in other localities.

	£	s.	d.
Kent Branch of British Medical Association	27	10	0
Staff of the Radcliffe Infirmary, Oxford; Manchester Medical Committee .. .. each	21	0	0
Kesteven Division of British Medical Association ..	13	2	6
Medical Committee of Durham County Hospital; Medical Staff of Macclesfield General Infirmary; Colchester Medical Society .. .. .. each	5	5	0
Medical Staff of Hospital of St. Cross, Rugby; Wrekin Medical Club .. .. .. each	3	3	0

The total sum for which Dr. Wood-Hill has been made responsible as the result of the recent trial—£1600—would soon be forthcoming if collective contributions such as the above were organised in other parts of the country.

I am, Sir, yours faithfully,

HAMILTON A. BALLANCE.

All Saints Green, Norwich, Jan. 9th, 1922.

Following is the fourth list of subscriptions. The first three lists have already been published in THE LANCET of Dec. 3rd, 17th, and 31st, 1921. Subscriptions should be sent to Sir Hamilton Ballance. The amount previously acknowledged was £681 1*s*.

	£	s.	d.
Mr. N. E. Waterfield, Port Sudan	20	0	0
Mr. G. Gordon-Taylor, O.B.E., London	15	15	0
Kesteven Division of British Medical Association (per Dr. Charles H. D. Robbs, Hon. Sec.) on behalf of the following members: Mr. T. P. Greenwood (Chairman), Dr. James Mason, and Dr. E. A. Hutton Attenborough, Stamford; Dr. H. Poole Berry, O.B.E., Dr. Ethel Pryce, Dr. Charles Frier, Dr. H. P. Dawson, and Dr. Charles H. D. Robbs, Grantham; Mr. O. Johnson, Bassingham; Mr. E. P. Titterton, Ancaster; Messrs. H. T. Benson and W. E. Stanton, Market Deeping; Dr. H. Joste Smith, M.C., Heckington, each £1 1*s*.; Dr. Charles S. Dodson, Claythorpe, 10*s*. 6*d*. ..	13	2	6
Sir C. Gordon-Watson, K.B.E., C.M.G. London ..	10	10	0
Colchester Medical Society (per Mr. E. G. Renny): Sir W. Arbuthnot Lane, Bart, C.B., and Mr. H. Tyrrell Gray, London .. .. .. each	5	5	0
Sir Anthony Bowlby, K.C.B., K.C.M.G., K.C.V.O.	5	0	0
Dr. Walter Bell, Lowestoft; Drs. J. L. M. Symns and Leonard B. Cane, Bungay; Mr. H. Nethersole Fletcher, Hove; Dr. W. C. Humphreys, Swansea; Dr. Eardley Holland, London .. .. each	3	3	0
Dr. Robert A. Bolam, O.B.E., Newcastle-on-Tyne; Captain Frank Harvey, R.A.M.C., Yateley; Mr. H. de Lisle Crawford, Wallasey; Dr. C. E. Douglas, Cupar; Dr. John W. Bone, Luton; Drs. E. A. and L. A. Dingley, Wednesbury; Mr. Aleck W. Bourne, London; Mr. W. S. Kerr, Sheffield; Dr. J. R. Campbell Canney, Cambridge; Dr. S. Vere Pearson, Mundesley; Dr. James Taylor, C.B.E., London; Sir Archibald E. Garrod, K.C.M.G., Oxford .. .. each	2	2	0
Dr. Ernest W. Wade, Harleston; Dr. C. Graham Havell, Felixstowe; Dr. Harry T. Wickham, Newport Pagnell; Mr. R. D. Attwood, Royston; Dr. Marion Gilchrist, Glasgow; Dr. E. Garneys Wales, Downham Market; Dr. R. Wallace Henry, Leicester; Mr. H. J. Satchwell, Taunton; Miss Margaret Hammond, Norwich; Mr. Llewellyn A. Baiss, O.B.E., Swanage; Mr. William Windley, Colston-Bassett; Dr. Ernest Ringrose, Newark-on-Trent; Mr. F. Manser, Tunbridge Wells .. each	1	1	0
Dr. Alfred J. H. Iles, Taunton	1	0	0
Dr. Frank Marriott, Yoxford; Mr. Hope Grant, London .. .. each	0	10	6
Mr. Leonard Gray, Dunster	0	10	0

RE-ESTABLISHMENT OF THE DISABLED: THE FINAL PHASE.

To the Editor of THE LANCET.

SIR,—The last and perhaps most interesting stage in the rehabilitation of men permanently disabled in war (apart from those who are so helpless as to be a charge upon public or private charity) is to provide appropriate work under right conditions. The earlier stages have been passed in hospitals, command depôts, convalescent centres, neurological wards, and during the last three years in centres for concurrent treatment and training in the country. These successive methods, by which we have endeavoured to restore disabled men to civil life, have met with a large measure of success. Great numbers of ex-service men have passed on to ordinary industry, and most of them hold their places.

There remains, however, a large residue for whom this machinery has proved insufficient: men who cannot always work full hours, who are therefore unfit for ordinary trades, and for whom the usual training has proved a blind alley. These are the permanently "reduced," "sub-normal," or "sub-standard" workers. Their number, variously estimated, amounts to many thousands, and is daily reinforced by others who fall out of the industrial ranks. They have capacity and willingness, but owing to their injuries cannot carry on at their former work. Many have tried to do so, but have failed. Others have been trained with great expense and care in new occupations, and have failed in them also. Many are seriously wounded, but,

whether obviously injured or not, their dominant trouble is now nervous or mental.

It is important to understand the mentality of these men. They are disappointed by failure. They have seen comrades "much worse wounded" return to work and independence. They are wearied by long delay and years of institutional life, and often demoralised by enforced idleness and brooding upon their disabilities. With this are connected weakened memory and power of concentration for external objects. Many of them, mere boys, feeling their dependence, have rushed into marriage, and now they see no future for themselves and their families. Anxiety is the badge of all their tribe. A few, it may be, have lost the will to work, considering that they have "done their bit," but these are becoming rare. The majority are keen to work, and if a prospect of independence with congenial labour is suggested to them, they gladly welcome it. It is a common experience that neurasthenic persons often "overdo it," but the capacity for work grows with regulated exercise, and *l'appetit vient en mangeant*.

We submit that on medical grounds the time for institutional treatment of these men has passed. Unless we now utilise their remaining capacity for remunerative work, and so relieve their natural fears and anxieties for the future, offering some prospect of permanent settlement for themselves and their families, they cannot be cured. If such provision is not made for them, thousands more will drift into asylums, prisons, and hospitals, and a double loss will fall upon the State—the loss of their productive labour and the cost of their permanent maintenance.

The "Advisory Committee for the Care and Settlement of Subnormal Workers in Rural Industries," of which we are members, has pointed out the serious and lamentable position caused by this needless human and economic waste of a large residue of workers—simply because they are unable to bear the ordinary conditions of labour. It was brought to our notice that a great variety of lucrative and congenial occupations, the so-called "middle" and "minor" industries of the Continent, hitherto not carried on in England, were in every way suitable for injured men, whether whole- or part-time workers. In their proposals a year ago the Committee set forth the great advantage for pensioners of combining such industries with open-air work in horticulture, agriculture, &c. We are glad to think that the industrial side of this policy has found acceptance by the Government, and is on the way to fulfilment.

But, in addition to this industrial development, our injured workers, after the experiences they have come through, will need other special conditions and guidance and some alleviation of their most pressing anxieties. The Committee therefore proposed that settlements should be established, where intensive training in scientific rural industries, under a central organisation, would be given to teams of workers, with a view to speedy employment and permanent settlement. What share will the medical man have in such settlements? Surely, as in the earlier stages of hospital and convalescent centre, his part is still essential, although different. It is likely that at this stage the emphasis will rightly be shifted to the industrial side, and that the medical man will be liberated for medical work. The new orientation should be such as to direct the minds of men not to their disabilities, but to employment and self-support.

Such settlements ought, we think, to grow naturally out of some of the existing convalescent centres. A centre which was designed to include a permanent medical side for the treatment and re-education of all forms of curable disablement, whether from war or in industry, would require an exceptional medical-industrial service. The same, mutatis mutandis, is true of settlements for tuberculous workers. Even in less specialised communities medical oversight will, however, have a part. Its general outlines may be stated as follows:—

1. *Regulation of Work.*—That for the success of reduced workers in industry, the amount and nature of work done by each man shall be definitely prescribed, with due regard to his physical and mental condition from time to time.

2. *Measurements, Records, and Research.*—That an approved and uniform procedure be adopted for measuring and recording each man's condition. A register of the capacity and fitness of all workers should be kept, and records made every three months.

3. *Treatment.*—That considering the remarkable success which has attended the clinics established by the Government for out-patient treatment, the same principle be adopted for subnormal workers in minor industries and on the land. It has been clearly demonstrated that medical oversight of this kind greatly promotes the fitness of the workers, and increases their economic value.

4. *Visiting Medical Staff.*—That, as small industries will be widely scattered, and the workers will not usually be concentrated in large aggregations, the necessary medical work should be undertaken by a small specially qualified visiting staff.

We are, Sir, yours faithfully,

WALTER ELLIOT.
R. FORTESCUE FOX.
LEONARD HILL.
ALFRED KEOGH.
ARTHUR LATHAM.
FREDERICK W. MOTT.
NATHAN RAW.
London, Jan. 6th. HUMPHRY ROLLESTON.

"STUDIES IN MILK": A PROTEST.

To the Editor of THE LANCET.

SIR,—I think a protest should be made respecting the entire omission of any reference to the work of others on the same subject—except that of his collaborators—by Mr. Stenhouse Williams, M.B., in his paper entitled "Studies in Milk" (THE LANCET, Dec. 31st, 1921, p. 1386). Anyone without special knowledge of the subject would, I think, infer that the important conclusions detailed there are solely the outcome of work done at the Reading Dairy Institute. Dr. Williams states at the commencement of his "Conclusions" (p. 1388): "Such is some of the work carried out at the Institute during the past five years *which has established certain important facts*" (the italics are mine). All these "facts" have been arrived at by other workers and have been published years ago. In support of this statement I need refer only to two papers: (1) In *Bulletin* No. 642, U.S. Department of Agriculture, dated April 30th, 1918, all the factors mentioned by Dr. Williams for the production of milk with a low bacterial content are exhaustively dealt with, data are given of over 1100 experimental observations, and the conclusions reached are practically identical with his; (2) in a report by the late Prof. Delépine "On the Conditions Necessary to Obtain a Clean Milk Supply," dated June 16th, 1918, similar conclusions are arrived at, data are given of the details for the sterilisation by steam of dairy utensils, and a simple form of steam steriliser is described suitable for use on a small farm. These are, of course, by no means the only contributions on the subject.

I am, Sir, yours faithfully,

Bacteriological Department, King's College, London, W.C., Jan. 5th, 1922. R. TANNER HEWLETT.

*** Dr. STENHOUSE WILLIAMS, having been invited to contribute his Studies from the National Institute for Research in Dairying, has been given the opportunity of seeing Prof. Hewlett's letter and replies to it as follows:—

"I am sorry that Prof. R. T. Hewlett thinks that I have been unjust to others in the article entitled 'Studies in Milk,' which you kindly published in THE LANCET. Prof. Hewlett raises two objections. The first, that in the 'Conclusions' I have not recognised the work of others, and second, that the work we have done was all done 'years ago.'

"With reference to the 'Conclusions,' perhaps I should have made it clearer that I was not writing

a survey of all the work that has been done upon milk, but of that which has been done here, and the conclusions to which it has brought us.

"With reference to the second point, perhaps it will be best if I consider the papers upon which my article was based. 'The Wastage of Milk' revealed for the first time the grave loss which the industry is suffering, very largely as the result of bad handling of milk. It formed a powerful economic argument for improvement. 'The Study of Two Types of Commercial Milk' showed the very wonderful level of bacteriological cleanliness and the keeping properties which the best type of commercial milk can maintain at all seasons of the year under the conditions of temperature and haulage which exist in *this* country. The work contained in 'Factors concerned in the Production of Clean Milk' was designed in order to clear up certain points raised by the previous papers. It was in part executed before the extremely valuable Bulletin No. 642 of the United States Department of Agriculture reached us. It was not dependent upon that bulletin for its inception. 'The Inquiry concerning the State of Cleanliness of Empty Milk Churns' is, so far as I know, new. It is work that has been of the utmost value in demonstrating the fact that the dairy farmer is by no means the only person responsible for the state of our milk-supply. The 'Report on a Simple Steam Steriliser' was carried out at the request of the National Clean Milk Society, who wished to introduce into this country an apparatus described by Ayres and Taylor in Farmers' Bulletin 748, U.S.A. Department of Agriculture. If Prof. Hewlett will read our report he will find that every acknowledgment of Ayres and Taylor's work is made. He will further find that we have brought out points which are not present in the original publication.

"Prof. Delépine, to whom Prof. Hewlett refers, specifically states in the Report of 1918 that he had not carried out the work that would be necessary before he could offer his steam steriliser to the dairy farmer. He points out, with that acumen which characterised him, that he had used the steriliser for his own purposes which did not involve the steaming of more than six two-gallon pails, and he went on to say that 'a larger number of pails or cans could be sterilised with the same apparatus, which would also be applicable to the sterilisation of full-sized churns. I do not wish, however, to state exactly the capacity of an apparatus of the size used in my experiments without making some practical trial. I hope the Committee will give me the opportunity of having this part of the work carried out under my direction.' 'The Sterilisation of Empty Milk Churns under Pressure' is a description of the times, &c., necessary for sterilisation under existing commercial conditions. I do not know that anyone has done this work before. Those who have seen the inadequate use to which steam is put at the present time will realise its importance."

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—May I state that the remarks attributed to me, in a report of a meeting which recently appeared in the *Daily Mail*, were those of another speaker. The meeting, which was on the subject of Games for Girls, was held on Jan. 4th in connexion with the Conference of Educational Associations at University College, and the report appeared in the *Daily Mail* of Jan. 5th and more shortly in the *Evening Standard* of the same date. The statistics quoted were also erroneously attributed to me, the only sentence which was mine being one that referred to the condition of the heart.

I should like to say that I entirely dissociate myself both from remarks and statistics.

I am, Sir, yours faithfully,

MARGARET G. THACKRAH.

New Cavendish-street, W., Jan. 7th, 1922.

Medical News.

THE first of six Hunterian lectures on the Facial Characteristics of Living Races of Mankind, illustrated by specimens from the collection of human osteology in the museum of the College, will be delivered in the theatre of the Royal College of Surgeons in Lincoln's Inn Fields, London, by Sir Arthur Keith, F.R.S., on Jan. 16th, at 5 P.M., and will deal with the facial and cranial characters of the Australian aborigines and allied native peoples.

AT a general meeting of the University of London Unionist Association, held on Jan. 5th, Sir Sydney Russell-Wells was unanimously selected as a candidate in the Conservative and Unionist interests at the next General Election, when Sir Philip Magnus will not offer himself for re-election.

ROYAL INSTITUTION.—On Jan. 17th, at 3 P.M., Dr. F. H. A. Marshall will give the first of two lectures on Physiology as Applied to Agriculture. The Friday evening discourse, at 9 P.M., on Jan. 20th, will be delivered by Sir James Dewar on Soap Films and Molecular Forces, and on Jan. 27th by Viscount Burnham on Journalism.

EUGENICS EDUCATION SOCIETY.—On Tuesday, Jan. 17th, at 5 P.M., Sir Frederick Mott will give a lecture on the Neuroses and Psychoses in Relation to Conscription and Eugenics, illustrated by lantern slides, at the Rooms of the Royal Society, Burlington House, Piccadilly, London, W. Major Leonard Darwin will preside, and all interested in the subject are invited to attend.

ROYAL SANITARY INSTITUTE.—The courses of lectures and demonstrations for the spring term, 1922, will begin for sanitary officers on Feb. 1st, for meat and food inspectors on Feb. 10th, and for women health visitors and child welfare workers on Feb. 3rd. An introductory lecture will be given to the students in the several courses by Prof. H. R. Kenwood on Monday, Jan. 30th, at 5.30 P.M. All particulars can be obtained at the offices of the Institute, 90, Buckingham Palace-road, London, S.W. 1.

PEOPLE'S LEAGUE OF HEALTH.—A series of eight lectures on "The Mind and What we Ought to Know about it" will be delivered at the Royal Society of Arts, John-street, London, W.C., on Mondays, at 6 P.M., commencing Monday, Feb. 6th, with Dr. Bernard Hart on Primitive Instinct. The other lectures will be given by Dr. R. H. Cole, Dr. R. S. Rows, Sir Maurice Craig, Sir Robert Armstrong-Jones, Sir Frederick Mott, Dr. W. A. Potts, and Dr. A. F. Tredgold. Fee for the series, 10*s.*; tickets from the hon. organiser of the League, 12, Stratford-place, London, W. 1.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—A course of elementary lectures on Infant Care, especially intended for creche nurses and probationers, will be given by Dr. Flora Shepherd, at Carnegie House, 117, Piccadilly, London, W., on Thursdays, from 7.30 to 8.30 P.M., from Jan. 26th to April 20th. The fee for the whole course of 12 lectures is 10*s.*, and for any single lecture 1*s.* 3*d.* Tickets are not transferable, and must be applied for in advance from Miss Halford or Miss Maddock, at 117, Piccadilly, London, W. 1.

THE LATE DR. BRICE SMYTH.—The death of Dr. Brice Smyth, one of the oldest and most esteemed medical practitioners of Belfast, took place at his residence on Jan. 2nd in his 84th year. A native of Banbridge, Co. Down, Dr. Smyth graduated in Trinity College, Dublin, in the year 1860, having previously become a Member of the Royal College of Surgeons of England. Settling in Belfast he soon acquired a large practice and became one of the leading practitioners in the city, filling many important positions in connexion with the local hospitals. He was for 30 years one of the medical officers of the Belfast Union Infirmary, and was also for many years physician and consulting physician to the Belfast Maternity Hospital. Dr. Brice Smyth was one of the founders of the Hospital for Sick Children, Queen's-street, Belfast, and was an ex-president of the British Gynæcological Society. He enjoyed in a high degree the regard and affection of his patients, and his assiduous attention, sympathetic manner, and quiet humour made him welcome in the sick room. His health had been failing for some time, and the end was not unexpected. His only surviving son, Dr. Malcolm Brice Smyth, is a physician attached to the Belfast Maternity Hospital, and to the Queen's-street Hospital for Sick Children.

Dr. Ian Macdonald, of Huelva and Seville, Spain, has been elected a corresponding member of the Society of Surgeons of Paris.

DONATIONS AND BEQUESTS.—The late Mr. William Crambe Reid, who bequeathed nearly £70,000 for charity, left £8000 to the Royal Infirmary, Edinburgh, and a similar sum to the Longmore Hospital for Incurables, Edinburgh.—The Italian Hospital has received from "a grateful ex-waiter" £1000 for the endowment of a bed.

IMPENDING RETIREMENT OF DR. J. NIVEN.—The Manchester City Council at its last meeting resolved to advertise for a medical officer of health, at a salary of £1500 a year, in succession to Dr. James Niven who retires in March next.

MANCHESTER ROYAL INFIRMARY.—Of the large number of former house physicians and house surgeons of the Manchester Royal Infirmary who served during the war 10 lost their lives. To perpetuate their memory a bronze tablet inscribed with their names has been presented by the Medical Board to the trustees of the Infirmary, and has been placed in the entrance hall of the hospital.

THE LATE DR. W. R. PIRIE.—William Rattray Pirie died on Jan. 5th at his residence in Aberdeen, after an illness lasting about 18 months. Dr. Pirie, who was 53 years of age, was the son of the late Mr. J. K. P. Pirie, a well-known citizen of Aberdeen. He graduated in Arts at Aberdeen University in 1888, and became M.B., C.M. in 1892. He further pursued his medical studies at Leipzig and Vienna, and then returned to Aberdeen and set up in general practice 29 years ago. He was appointed one of the medical officers to the Aberdeen Dispensary, later became an anæsthetist at the Aberdeen Royal Infirmary, and ultimately one of the physicians to this institution. During the war he was attached to the 1st Scottish General Hospital with the rank of major, and for this, and other work in connexion with medical boards, he was awarded the O.B.E. For a number of years he held the post of certifying surgeon under the Factories Act. Dr. Pirie was twice married, and leaves a widow and one son.

GLASGOW MEDICAL LUNCH CLUB.—On Dec. 29th last Dr. A. K. Chalmers, medical officer of health for the city of Glasgow, addressed the members of the Glasgow Medical Lunch Club at its weekly meeting at Ferguson and Forrester's restaurant. Dr. Chalmers expressed approval of the purposes for which the club had been formed—to enable medical men to meet once a week to discuss matters of professional interest—and passed on to the consideration of public health. He believed that while the future of public health depended on the general practitioner, unless the practitioner stepped more rapidly into the forward movement he might be left out. Emphasising the need for attention to the health of children, Dr. Chalmers referred to the great numbers of the latter who were healthy at the age of 1 year and found to be suffering from all kinds of diseases at the age of 5 years. He believed that a monthly bulletin would be valuable, but the coöperation of the general practitioner would be necessary. A new medical function had now appeared with regard to industrial hygiene; the medical examination of applicants for work was the true basis of industrial employment.

GLASGOW ROYAL INFIRMARY.—On Jan. 1st the managers of the infirmary met with the nurses, following a precedent established on New Year's Day, 1868. During the course of the function, which was presided over by Lord Provost Paxton, Mr. T. Warren, convener of the finance committee, described the present situation with regard to the Lister Ward. In 1912 the board of management had rather hurriedly decided to retain the ward—upon the express understanding that its decision was not binding upon any future board—as a memorial to Lord Lister and to the initiation of his discovery of antisepsis whilst working in the infirmary wards half a century ago. In 1914, however, the resolution was rescinded, and it was decided to demolish the building because it was very old, and possibly insanitary, and, even with the proposed reduction of height, in a position to interfere with the light and air of the new infirmary buildings. The dedication of part of the infirmary ground and buildings to the purposes of a museum was not consonant with the true purposes of the institution, and the managers had no power to undertake any liability concerning adaptation and maintenance of such a memorial; permanent or temporary retention was also beyond the power of any board to grant. Reasonable accommodation for commemoration of Lord Lister's work, in the shape of a statue or bust to be placed within the infirmary or its grounds, had been offered; the materials of the building had also been offered for re-erection elsewhere; more than that the board was unable to do.

LITERARY INTELLIGENCE.—MM. A. Maloine and Fils, Paris, announce the following new volumes to appear shortly: "L'Urologie en Clientèle," by Dr. Le Fur; "La Dermatologie en Clientèle," by Dr. H. Gougerot; and "Le Traitement des Fractures et Luxations en Clientèle," by Dr. Masmonteil.

VICTORIA INFIRMARY, GLASGOW.—At the annual New Year's day meeting of the board of the Victoria Infirmary, Mr. A. K. Rodger, M.P., gave some interesting statistics relating to the voluntary support received by the institution from working-class people. Before the war the infirmary expenses amounted to £21,000 a year; last year the sum was £49,161. In 1914 general subscriptions totalled £13,115, and last year £41,904. The increase in expenses was £27,000, the increase in subscriptions £28,000. He had been surprised when visiting a large London hospital to find that public subscriptions came to only £1500; last year the infirmary had received £12,000. He hoped that transference to the rates would be the last resort for Scottish infirmaries.

THE LATE DR. A. A. RUTHERFORD.—Andrew Adams Rutherford, who died at the Royal Infirmary, Manchester, from blood poisoning, believed to be the result of infection by a patient whom he had been attending for erysipelas, graduated M.B., M.Ch. at Edinburgh in 1912, taking his M.D. three years later. He graduated also in law and was a barrister of the King's Inns, Dublin, and of the Middle Temple. His post-graduate experience included resident appointments at the Royal Infirmary and Fever Hospital in Edinburgh. During the war he held a temporary commission in the R.A.M.C., retiring with the rank of captain, when he acquired a practice in Buxton. Here his equipment would have carried him far, had not his life been prematurely cut short.

DUBLIN (83) GENERAL HOSPITAL: ANNUAL DINNER.—The annual dinner of the members of the Dublin Unit of 83 General Hospital, Boulogne, was held on Jan. 7th in the Royal College of Surgeons, under the presidency of Sir William Taylor, who organised the unit early in 1917. Nineteen members of the unit were present. The guests included General Sawyer and Colonel Forrest, who were respectively D.D.M.S. and D.A.D.M.S. at Boulogne in 1917, and Mr. A. Miller, Registrar of the Royal College of Surgeons. During the evening messages of greeting were sent to Mr. Edward Taylor and to Mr. C. B. Goulden, who were prevented from attending the dinner by illness.

THE LATE DR. ALFRED ASHBY.—Dr. Ashby, who died suddenly at the entrance to the Reading Town Hall on Jan. 7th, was consulting medical officer of health, public analyst, and gas examiner to the County Borough of Reading, which he had served for over 40 years. He received his medical education at Guy's Hospital, qualified with the M.R.C.S. and L.S.A. in 1869, and for a time was surgeon to the Westminster General Dispensary. In 1871 he obtained the F.R.C.S. Eng., by examination, and a year later graduated M.B. at the University of London. Before coming to Reading he had held positions in the public health service at Grantham, Newark, and Sleaford. Dr. Ashby was a Fellow of the Institute of Chemistry, a member of the Society of Public Analysts, and a contributor to Stevenson and Murphy's Treatise on Hygiene.

DEATH OF A GENEROUS BENEFACTOR.—Mr. A. Henry Musgrave, D.L., a generous supporter both of charities and of educational institutions throughout his life, died at Belfast on Jan. 2nd in his 94th year. A Senator of the Queen's University, he took a warm interest in that institution, and his portrait hangs in the Great Hall of the University. The Musgrave Chair of Pathology owes its foundation to his late brother, Sir James Musgrave, D.L., who was for many years chairman of the Belfast Harbour Board. Mr. Henry Musgrave was a man of simple habits and kindly nature, much beloved by his friends and fellow citizens. He has left the grounds of Drumglass House to be converted into a public park, and his collection of pictures is bequeathed to the Belfast Corporation. His generosity to hospitals is a welcome example at a time when the question of hospital maintenance is causing much anxiety. Under his will the following hospitals benefit: Royal Victoria Hospital, Belfast, £50,000; Ulster Hospital for Children and Women and Hospital for Sick Children, Belfast, each £10,000; Lisburn Infirmary, £2000; Ulster Eye, Ear, and Throat Hospital, Samaritan Hospital, Belfast, Ulster Hospital for Skin Diseases, and Stewart Institute for Imbeciles, Dublin, each £1000. The Nurses for the Sick Poor receive £5000, and the Royal Medical Benevolent Fund £2000. Education is no less generously provided for. To the Queen's University £47,000 is allocated—£20,000 for general purposes, £20,000 for the foundation of research scholarships, and £7000 to establish a lectureship in physics.

THE Home Secretary has appointed Lieut.-Colonel P. S. Lelean, C.B., C.M.G. (formerly of the Royal Army Medical College), to be an Inspector under the Cruelty to Animals Act, 1876, which relates to experiments on living animals.

BRISTOL HOSPITALS AND PRINCESS MARY.—The Lord Mayor of Bristol has announced his intention of calling a committee with a view to collecting subscriptions for the endowment of beds at the Royal Infirmary, General Hospital, and Children's Hospital in Bristol, by way of commemorating the approaching marriage of Princess Mary.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held in the Board Room of the Miller General Hospital, Greenwich, to-day, Friday, Jan. 13th, at 8.45 P.M. Dr. C. T. T. Comber, the President, will occupy the chair, and clinical cases will be shown by Mr. C. A. Joll, Mr. Willmott Evans, Dr. H. Nockolds, Dr. Harold Pritchard, and others.

DIAGNOSIS OF SMALL-POX IN LONDON.—In view of the importance of early diagnosis, arrangements have been made by the London County Council under which in doubtful cases the certifying practitioner confers with the medical officer of health of the borough. Should a further opinion be required, on application to the Public Health Department, 2, Savoy Hill, W.C. 2 (Tel. Gerrard 3641), the services of Dr. W. McC. Wanklyn will be available at any time of the day or night and during week-ends.

DEATH OF DR. R. ROYCROFT.—Richard Roycroft, a popular medical practitioner of Greytown, Natal, died there on Dec. 17th last, after a protracted illness. Born in Ireland, Dr. Roycroft received his medical education in Edinburgh, where he qualified M.B., C.M. in 1895. During the South African War he was stationed as an army surgeon at Fort Napier, Pietermaritzburg, and after peace was declared decided to settle permanently in South Africa. He joined Dr. Wright, of Greytown, in partnership, and on the latter's death carried on the practice single-handed. He leaves a widow and a daughter of 15.

Appointments.

ADAMSON, W. W., M.Sc., M.B., Ch.B. Glasg., D.P.H., has been appointed Pathologist to the Royal Infirmary, Hull.
CASSIDY, L., M.D., F.R.C.S.I., Master of the Coombe Lying-in Hospital.
JACOBS, C., M.B., B.S. Durh., Honorary Ophthalmic Surgeon, Manchester Victoria Memorial Jewish Hospital; Oculist to Cheshire Education Committee.
OWEN-MORRIS, ROSEMARY, M.B., House Surgeon to the Liverpool Stanley Hospital.
RICHARDS, E. W., M.B., Ch.B. Edin., D.P.H., Medical Officer of Health and Schools Medical Officer, Port Talbot.
SUNDELL, C. E., M.D. Lond., M.R.C.P. Lond., Visiting Physician to King George's Sanatorium for Sailors, Liphook.
WHITE, G. B. M., M.B. Lond., F.R.C.S. Eng., Emeritus Surgeon to the Royal Northern Hospital.

Vacancies.

For further information refer to the advertisment columns.

Bedfordshire County Council.—Asst. County Tub. O. £500.
Birmingham General Hospital.—Res. M.O. £155.
Brighton, Royal Sussex County Hospital.—H.S. £175.
Bristol, Cossham Memorial Hospital, Kingswood.—Res. H.S. £200.
Buxton, Devonshire Hospital.—Asst. H.P. £150.
Chartham Mental Hospital, near Canterbury.—Second Asst. M.O. £350.
Cheadle, Cheshire, Cheadle Royal.—Sen. Asst. M.O. £600.
Chelsea Infirmary, S.W.—First Asst. M.O. £400.
Chester Royal Infirmary.—Hon. P. Hon. Ophth. S.
City Dispensary, College-street, E.C.—Asst. M.O. 50 guineas.
Doncaster Royal Infirmary and Dispensary.—Sen. and Jun. H.S.'s. £220 and £200.
Dudley County Borough.—M.O.H. and Sch. M.O., &c. £750.
East London Hospital for Children, &c., Shadwell.—Asst. Phys. and Ophth. S.
Freemasons' Hospital and Nursing Home, Fulham-road, Chelsea.—Res. M.O. £250.
Gravesend Hospital.—H.S. £200.
Hellingly, Sussex, East Sussex County Mental Hospital.—Jun. Asst. M.O. £350.
Hospital for Consumption, &c., Bromplon.—H.P.
Hospital for Sick Children, Great Ormond-street.—Res. Med. Supt. £300.
Kensington and Fulham General Hospital, Earl's Court.—Res. M.O. £200.
Leeds Hospital for Women and Children.—Two H.S.'s £50.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
London Hospital, Whitechapel.—Surg. Reg. £365.
Manchester, Ancoats Hospital.—Res. Surg. O. £250.
Manchester, Victoria Memorial Jewish Hospital, Cheetham.—Res. M.O. £150.
Nottingham General Hospital.—H.S. £200.
Queen's Hospital for Children, Bethnal Green.—Pathologist. £300. Also H.P. and H.S. £100.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Free Hospital, Gray's Inn-road.—Surg. Reg. £250.
Royal Northern Hospital, Holloway.—P.
St. George's Hospital, S.W.—Res. A.P. £350.
Sheffield Royal Infirmary.—H.S. Asst. Cas. O. £150 each.
Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.
South London Hospital for Women, Clapham Common, S.W.—H.S. and H.P. £100 each.
Stockport Education Committee.—Asst. Sch. Doctor. £500.
University of London.—Examiners.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
Worthing Hospital.—Hon. Ophth. S.
Wrexham Infirmary.—H.S. £150.

Births, Marriages, and Deaths.

BIRTHS.

BASTIAN.—On Jan. 4th, at South-parade, Southsea, the wife of Surgeon-Commander W. Bastian, R.N., of a daughter.
OSBORN.—On Jan. 5th, at Sheet-street, Windsor, the wife of Dr. A. G. Osborn, of a daughter.

MARRIAGES.

COLEMAN—WHAITES.—On Jan. 5th, at Shrewsbury, Henry Norreys Coleman, B.A., B.Ch. Cantab., to Elizabeth Gertrude, daughter of Mrs. and the late Rev. George Whaites, of Savada, Shrewsbury.
KELSON—LANE.—On Dec. 22nd, 1921, at All Saints, Ealing, William Henry Kelson, M.D., F.R.C.S., to Hilda Frances, younger daughter of Mr. and Mrs. A. W. Lane.

DEATHS.

COLBOURNE.—On Jan. 7th, at Beckenham, Dr. Louis Colbourne, in his 73rd year.
GRINLING.—On Jan. 2nd, at Dene House, Walker-on-Tyne, F. N. Grinling, M.R.C.S., L.R.C.P., aged 58 years.
MYERS.—On Jan. 5th, at Louth, Lincs, Charles John Myers, M.R.C.S., L.S.A., late M.O.H., Louth Rural District Council, aged 81 years.
RUTHERFORD.—On Jan. 2nd, at the Royal Infirmary, Manchester, of acute blood poisoning, Andrew Adams Rutherford, M.D., Broad-walk, Buxton.
SMITH.—On Jan. 4th, at Codsall, Wolverhampton, S. Ashley Smith, M.D., J.P., aged 72 years.
WOODWARD.—On Jan. 8th, at Pershore, Worcester, Martin Woodward, M.R.C.S., in his 86th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1921.

THE Index and Title-page to Vol. II., 1921, which was completed with the issue of Dec. 31st, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

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Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, Jan. 19th.—List of probable papers: Prof. L. Hill, H. M. Vernon, and D. H. Ash: The Kata-Thermometer as a Measure of Ventilation. Lieut.-Col. C. B. Heald and Major W. S. Tucker: Recoil Curves as Shown by the Hot Wire Microphone (communicated by Sir Charles Sherrington, P.R.S.). E. W. A. Walker: Studies in Bacterial Variability. On the Occurrence and Development of Dys-agglutinable, Eu-agglutinable, and Hyper-agglutinable Forms of Certain Bacteria (communicated by Prof. G. Dreyer). Marjory Stephenson and Margaret Whetham: Studies in the Fat Metabolism of the Timothy Grass Bacillus (communicated by Prof. F. G. Hopkins). J. A. Gardner and F. W. Fox: On the Origin and Destiny of Cholesterol in the Animal Organism. Part XII. On the Excretion of Sterols in Man (communicated by Dr. A. D. Waller). S. J. Lewis, D.Sc.: The Ultra Violet Absorption Spectra and the Optical Rotation of the Proteins of the Blood Sera (communicated by (Prof. J. N. Collie).

ROYAL SOCIETY OF MEDICINE 1, Wimpole-street, W.

Tuesday, Jan. 17th.

GENERAL MEETING OF FELLOWS: at 5 P.M. Ballot for election to the Fellowship.

PATHOLOGY: at 8.30 P.M.
Sir George Lenthal Cheatle: Multicentric Origin in a Case of Rodent Ulcer of the Trunk.
Mr. J. B. Buxton: Grass-disease and Botulismus.
Dr. A. B. Rosher and Dr. H. A. Fielden: Agglutinins for Bacilli of the Salmonella Group in Sera Obtained from the General Population.
Dr. W. W. C. Topley: The Effect of Dispersal during the Early Stages of a Mouse-epidemic.

Wednesday, Jan. 18th.

HISTORY OF MEDICINE: at 5 P.M.
Paper:
Dr. F. P. Wilson: The Plague in Shakespeare's London.

EPIDEMIOLOGY AND STATE MEDICINE.—Members of this Section are cordially invited to attend the above meeting.

Thursday, Jan. 19th.

DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
The following cases will be shown by Dr. Barber: (1) Lupus Erythematosus with Arthritis; (2) Pseudo Pelade; (3) Papillary Dermatitis of the Axillæ and Groins.
Other cases will be shown.

Friday, Jan. 20th.

OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Cases and Specimens will be shown by Mr. Richard Lake and others.
Exhibit:
The Thermionic Valve of Prof. J. H. Fleming: A Piece of Apparatus Capable of Amplifying Sound.
Demonstration:
Mr. Robinett Scruby (introduced by Mr. Frederick Spicer): A Demonstration to show the Possibilities of Applying the Thermionic Valve to Aid the Deaf.
Paper:
Mr. Alexander Tweedie: Short Account of the Research Work being Conducted in Utrecht on the Saccular, Utricular, and Allied Reflexes (continued).

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Discussion on Electro-therapy in Gynæcology, to be opened by Dr. Zimmern. Dr. Agnes Savill, Dr. Sloan-Chesser, Dr. C. A. Robinson, Dr. Walter J. Turrell, and others will take part.

OBSTETRICS AND GYNÆCOLOGY.—Members of this Section are specially invited to attend the above meeting of the Section of Electro-Therapeutics.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, London.
WEDNESDAY, Jan. 18th.—8 P.M., Mr. Julian S. Huxley: Recent Advances in the Determination of Sex in Animals.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
THURSDAY, Jan. 19th.—8.15 P.M. *Paper:* Dr. E. J. Butler, Director of the Imperial Bureau of Mycology: Some Relations between Vegetable and Human Pathology. Preceded by a Demonstration at 7.45 P.M.

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester-sq.
TUESDAY, Jan. 17th.—4.30 P.M. Pathological Specimens and Cases sent for Consultation. Clinical Cases: Dr. J. L. Bunch: Lichen Planus and Rodent Ulcer. Dr. Dennis Vinrace: Urticaria Simulating Psoriasis. Dr. M. G. Hannay: Psoriasis. Dr. W. K. Sibley: Acute Pemphigus and Psoriasis. Discussion on Psoriasis, to be opened by Dr. W. Griffith.
Fellows' Monthly Dinner at the Cavour Restaurant Leicester-square, 7 P.M. Tickets 6*s.* 6*d.* each.

THE MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
TUESDAY, Jan. 17th.—8.30 P.M. *Paper:* Prof. Harvey Littlejohn: The Proof of Live Birth in Criminal Cases (followed by a discussion).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
MONDAY, Jan. 16th.—5 P.M., Hunterian Lecture:—Sir Arthur Keith: The Facial and Cranial Characters of the Australian Aborigines and Allied Native Peoples.
WEDN.—5 P.M., Negro and Negroid Types of Face and Skull.
FRIDAY.—5 P.M., The Mongolian Face and its Modifications.

FELLOWSHIP OF MEDICINE SPECIAL POST-GRADUATE COURSE. Closes Feb. 18th.
MONDAY, Jan. 16th.—10 A.M., National Hospital for Diseases of the Heart: Dr. Goodall: Systematic Investigation of Cardio-Vascular Problems. 1.15 P.M., St. George's Hospital: Dr. Donaldson: Post-mortem Demonstrations.
TUESDAY.—10 A.M., St. Marylebone General Dispensary: Dr. Eric Pritchard: The Infant Welfare Movement. 2 P.M., National Hospital for Diseases of the Heart: Sir Sydney Russell-Wells: Ætiology of Heart Disease.
WEDNESDAY.—10 A.M., National Hospital for Diseases of the Heart: Dr. Price: Prognosis in Heart Disease. 2 P.M., Dr. Moon: Differential Diagnosis of Organic and Functional Disease.
THURSDAY.—10 A.M., National Hospital for Diseases of the Heart: Dr. Hamill: Modern Cardio-Therapy. 3 P.M. St. Marylebone General Dispensary: Dr. Eric Pritchard: Breast Feeding. 6 P.M., Middlesex Hospital: Dr. MacCormac: V.D. Methods and Selected Cases.
FRIDAY.—10 A.M., National Hospital for Diseases of the Heart: Dr. Parsons-Smith: Congenital Heart Disease. 2 P.M., Dr. Parkinson: The Polygraph in General Practice.
SATURDAY.—11.30 A.M., Western Hospital, Fulham: Dr. R. M. Bruce: Selected Cases of Infectious Diseases. 2 P.M., Hospital for Consumption and Diseases of the Chest.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (University of London), Berners-street, W.
FRIDAY, Jan. 20th.—3 P.M., Emeritus Lecture: Sir James Kingston Fowler: Diagnosis.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Jan. 16th.—5.30 P.M., Dr. R. O. Moon: Rheumatic Infection of the Heart.
Daily:—10 A.M. and 2 P.M., Out-patients and In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC POST-GRADUATE COURSES, Queen-square, W.C.
MONDAY, Jan. 16th.—12 noon, Dr. Greenfield: Cerebro-spinal Fluid (1). 2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Afferent Paths in the Nervous System and Effects of Lesions Thereon: (1).
TUESDAY.—2 P.M., Dr. Grainger Stewart: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Afferent Paths in the Nervous System and Effects of Lesions Thereon (2).
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., The Pathogenesis of Involuntary Movements (1).
FRIDAY.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Dr. Collier: Vascular Disease of the Nervous System (1).

WEST LONDON POST-GRADUATE COURSE, West London Hospital, Hammersmith, W.
MONDAY, Jan. 16th.—5 P.M., Dr. Arthur Saunders: Toxic Jaundice.
TUESDAY.—5 P.M., Mr. Tyrrell Gray: Intestinal Obstruction.
WEDNESDAY.—5 P.M., Dr. Simson: Modern Developments in the Management of Labour.
THURSDAY.—12 noon, Dr. Scott Pinchin: Diseases of the Heart.
FRIDAY.—5 P.M., Dr. Burrell: The Early Diagnosis of Tubercle of Lung.
SATURDAY, 10 A.M., Dr. Burnford: Visit to Medical Wards.
Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Jan. 19th.—6 P.M., Chesterfield Lecture: Dr. W. Griffith: Diseases of the Skin Appendages.

ANCOATS HOSPITAL.
THURSDAY, Jan. 19th.—4.30 P.M., Dr. W. J. S. Reid: Diagnosis and Treatment of Neurosyphilis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Jan 17th.—4.30 P.M., Dr. A. Ramsbottom: Pleural Effusion.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE, Whitworth-street West Branch, Manchester.
FRIDAY, Jan. 20th.—4.30 P.M., Dr. Lapage: Tuberculous Infection and Tuberculous Disease in Infants and Children.

BRITISH MEDICAL ASSOCIATION (North of England Branch).
FRIDAY, Jan. 20th (at the Royal Victoria Infirmary, Newcastle-on-Tyne).—2.15 P.M. to 5 P.M., Scientific Demonstrations.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.
A Course of Lectures on Tuberculosis and Public Health in the Lecture Hall of the Institute.
WEDNESDAY, Jan. 18th.—4 P.M., Dr. C. W. Saleeby: The Influence of Light and Air in the Prevention and Cure of Tuberculosis.

Notes, Short Comments, and Answers to Correspondents.

THE ERECT POSTURE.*

BY J. KNOX THOMPSON, M.B., B.CH., B.A.O. R.U.I.

IT is difficult to estimate the antiquity of the erect posture in man and his ancestors. The monkeys probably arose from arboreal lizards, and were prevented by the arboreal habit from entering into competition with most other vertebrates in the matter of rapid locomotion on the ground; thus they did not learn to walk and run on the tips of their fingers and toes—or on one toe only, like the horse—and the use of the hands and feet as prehensile organs was therefore retained. Arboreal habit developed not only the grasp of the hands and feet, but also skilled movements in picking and peeling of fruits, removal of seeds and outer covering of nut kernels, &c.; the attitude of balance in the fork of a tree, supported by feet and tail, with hands free to gather and hold food, was probably a factor in the development of the erect posture—which, it may be noted, is not yet completely developed in all people. Some primitive races who have the squatting habit, and even many country people at home, keep the knees and back bent and have a carriage and gait not much better than that of the higher apes. As a general rule, the more highly civilised the people the better is the carriage, but a perfectly erect carriage cannot be attained without drill.

The effects produced by the erect posture in man may for convenience be summed up under general effects and effects on bones and joints, muscles and fascia, blood and lymph-vessels, viscera, and the nervous system.

General Effects.

Advantages.—(*a*) Freedom of upper limbs for use of instruments for skilled work. The hand, to a large extent, instructs the brain; we might use Mr. Legge's phrase and term it the "thinking hand." (*b*) Range of vision and hearing increased—i.e., these senses were, to a large extent, substituted for smell, leading to a psychology based rather on sight and hearing than on smell, and thus to the development of art and music; similarly, that substitution resulted in a sexuality founded on impressions, ocular and auditory, rather than olfactory. (*c*) More formidable appearance owing to height and longer reach. (*d*) Purer air to breathe (less dust) and greater cleanliness of person and of habits, the upper part of the body being no longer in contact with, or in close proximity to, the ground. (*e*) Probable improvement of cerebral hygiene owing to more efficient lymph flow.

Disadvantages.—(*a*) Unstable equilibrium; and (*b*) strategic weakness from point of view of direct physical attack or defence. The erect posture forms better target for missiles; vital and tender parts are more exposed than in the quadruped position.

Effects on Bones and Joints.

Progression in the erect posture, and indeed its mere maintenance, causes a greater strain on all the bones and joints of the spinal column and of the lower limbs, and the jar of suddenly alighting on the ground is greatly increased and transmitted along the whole length of the spinal column to the base of the skull, leading to a much greater likelihood of injury to these bones and joints, and of spinal and cerebral concussion, than in the quadruped position. Basal fracture of the skull is nearly always due to indirect violence. Middle-ear disease is greatly aggravated, and the tendency to it increased in man, by the fact that the Eustachian tube enters the tympanic cavity at a point lowest in the quadruped position but not in the erect position, and so drainage is less perfect. Mastoid disease is in the same category, the long axis of the mastoid antrum being transferred by erect posture from a horizontal, or at any rate oblique, position to a vertical one.

An obvious suggestion for the treatment of middle-ear disease, where the tympanum is still intact and the Eustachian tube patent, is to direct the patient to lie on the face rather than on the back, and with the opposite cheek on the pillow so as to assist drainage. The opening of the antrum of Highmore into the infundibulum is placed far forward in the inner wall of that cavity; hence, the quadruped position, with the head thrown forward, secures better drainage. When there is pus in this cavity, lying on the face with the opposite cheek against the pillow is the best position, or the all-fours position if the patient is up. For all nasal cavities, the ethmoid air cells, the superior middle and inferior meati, and the sphenoidal sinus, the ideal position from the point of view of perfect drainage, is the quadruped one, with the face directed downwards and forwards; the worst postures are on the back or in the upright position with the head thrown back, for then all the secretions tend either to be retained in their respective cavities or to drain backwards into the naso-pharynx, thus infecting Luschka's and the lateral tonsils, the larynx and trachea, and so the whole respiratory apparatus, as well as the digestive tract. The origin of spitting in man is undoubtedly the erect posture, as the lower animals do not require to spit. I believe that the teeth, especially those in the upper jaw, also tend to suffer from the erect posture, owing to the loss of salivary lavage.

Erect posture alters the natural curve of the spine as seen in the quadruped position. Instead of the uniform straight or slightly convex dorsal (kyphotic) curve from one end of the column to the other found in monkeys, we now find a series of curves arranged in opposite directions. The convex backward curve in the thoracic region is a primary curve, present in quadrupeds, and probably developed when the ventral surface of the body was in contact with the ground to provide more room for the thoracic (and abdominal) contents; it became more or less fixed by the ossifications of the ribs and sternum to form a box capable of withstanding atmospheric pressure, and so remained even after the lengthening of the limbs when the ventral surface no longer came into contact with the ground. The thoracic curve, so far as I can make out, is absent in fishes but present in some reptiles and birds.

The lumbar spinal curve is the curve of the erect posture. When a quadruped attempts to stand on its hind legs, it first raises the head by increasing the cervical curve; the thorax, being a rigid box, the thoracic curve can only be altered to a very limited extent, and as the lower limbs are fixed by their distal extremities on the ground, and with them the pelvis, it is necessary to bend the lumbar spine. Some slight—but only slight—movement may occur at the sacro-iliac synchondrosis, and the relation of the head of the femur to the acetabulum cannot be much altered; the main thrust on the lower limb must be supported by the projecting thickened upper lip of the acetabulum, or the head of the femur would be shot out of its socket. The relationship to the hip-joint of the muscles running from the innominate bone to the lower limb must be preserved. Since the adoption of the erect posture a gradual alteration has probably occurred in the angle at which the innominate bones articulate with the sacrum. The lumbar curve often appears to be better marked in primitive races—the reason being, I believe, that the latter spend much of their time in semi-erect and squatting postures, so that the anterior thigh muscles have not become stretched by use as in the higher races; an exaggerated lumbar curve is therefore necessary.

In debilitated individuals the sternum and ribs tend to sag—owing to weakness of the muscles in front of the neck—lessening the thoracic capacity. This constriction of the upper part of the chest, coupled with the fact that owing to the increased effort required in the erect position the up-and-down movement of the ribs in respiration is much restricted, must go far to increase the tendency to tuberculosis so common in this part of the lung in man. Infection from the glands of the triangles of the neck may also be a factor owing to bad teeth, tonsillitis, &c. The intercostal muscles being also atonic, and having to fight against the force of gravity, the respiratory movements of the ribs are curtailed and also sag; with them sag the costal cartilages, especially the lower ones, which have not got a direct attachment to the sternum. The effect of this sagging is to lengthen the thorax and to diminish its diameters, antero-posterior and lateral, as in the alar chest.

The adoption of the erect posture in children is apt to have a marked effect upon the development of the thorax, for, as we have already seen, it favours the development of nasal and tracheal catarrh, and so of respiratory obstruction in the shape of post-nasal adenoids as well as digestive trouble. No doubt, as Sir J. Barr states, hypothyroidism is also a factor. In the quadruped position the heart and lungs rest upon the sternum, costal cartilages, and ventral portions of the ribs, and support them, so that the chest is strengthened against atmospheric pressure at its weakest points, and the dorsoventral diameter is elongated. In man, however, the thoracic viscera rest mainly upon the diaphragm and its central tendon, and to some extent upon the posterior portions of the lower ribs; they also receive support by swinging from the fibrous tissue attached to the vertebral column behind. The dorsoventral diameter is reduced, and the sternum and costal cartilages are not supported against the atmospheric pressure by the weight of the heart and lungs; they tend to collapse with the production of flat chest, hollow chest, alar chest, &c., and the funnel-shaped central depression often seen in shoe-

* Being the substance of a paper read before the Liverpool Medical Society.

makers. The increase in the lumbar curve in debilitated individuals is brought about partly by the weight of the upper part of the body—the anterior common and other ligaments yielding under the strain—but also by the drag of the abdominal contents, supported as they are not by a bony framework like the thorax, but only by a sheet of more or less atonic muscles and tendons in front and at the sides. The drag of the psoas muscles also increases lumbar lordosis. Corsets worn by women, which take the weight of the upper part of the body from the lower dorsal and lumbar spines, where strain is greatest, and transfer it directly from the upper dorsal spine to the pelvis, also support the muscles and fasciæ of the abdominal wall and relieve the drag occasioned by the weight of the abdominal contents upon this part of the spine. Their drawback is that they tend to aggravate the condition by leading to the atrophy of disuse; when not properly adjusted they also interfere by pressure, with venous and lymphatic return, and with the functions of the abdominal and thoracic viscera. Spinal scoliosis is common in man, because when a slight deviation from the straight occurs through infantile paralysis, occupation, contraction of lung, rachitis, &c., the weight of the head and upper limbs tends rapidly to increase the deviation; rotation occurs, and the sternum and ribs are twisted simultaneously with displacement of the viscera, and often with interference with the blood and nerve-supply, which renders them more liable to disease. The all-fours posture might be tried as a cure for this in man. In animals, as might be expected, lordosis is the commonest deformity. Dislocation at the junction between the lumbar and sacral spine, owing to the acute angle, is apt to occur more readily in man than in quadrupeds—e.g., after a fall on the feet from a height.

Owing to pressure caused by the erect posture the vertebral and intervertebral joints, especially in the young, are probably much more liable to disease in man than in quadrupeds, the pressure interfering with blood and lymph circulation, &c., and so with nutrition. That spinal disease is met with in the joints between the atlas and axis and between the occiput and axis is no doubt influenced by the weight of the head, infection being probably conveyed from the retropharyngeal glands. Periostitis of the cervical bodies is not uncommon in horses, but the process is mostly superficial. The effects of the ravages of Pott's disease are greatly aggravated by the erect posture; in quadrupeds the maintenance of the spinal continuity and curve is due to interlocking of articular processes and disease of the vertebral bodies need not lead to any displacement except perhaps slight lordosis, but in man collapse and fusion of diseased vertebral bodies is the rule, in some cases causing actual dislocation of the spine and lesions of the cord and its nerves, and in nearly all cases severe deformity, such as marked kyphosis and a hunch-back condition, with consequent serious interference with the visceral functions. In man the weight of the abdominal contents has twisted the innominate bones so that the iliac bones form saucers or fossæ to support them, instead of being merely part of the attachments of the lower limbs to the trunk.

Owing to the fact that the whole weight of the body is continually thrown on to the lower limbs in man, injuries and affections are more varied and frequent in the latter than in the hind limbs of quadrupeds. Contracted and deformed pelvis, a serious condition in women on account of parturition, is largely due to the erect posture, even though the tendency to its development is due to rickets, osteomalacia, and so on.

Effects on Muscular, Fascial, Tendinous, and Bursal Systems.

The muscles and ligamentous structures behind the vertebral column in the neck are subjected in man to less stress than in the quadruped; in man the head instead of being swung at the end of the column is balanced on top of it, the strain being transferred from the ligamentum nuchæ and spinous and articular processes of the vertebræ to the occipital condyles, vertebral bodies, and neural arches, and to the joints between them. The muscles upon which most of the work of maintaining the erect posture is thrown are the erector spinæ and its accessory groups. It is plain that this great group of muscles, especially in the lumbo-sacral region, is subjected to very much greater stress in the human being than in the quadruped: the mechanism has not yet become properly adapted to the new stress, and lumbago and rheumatism in the back are common, in spite of the fact that the back is less exposed to the weather in man than in quadrupeds. The defective adaptation of these muscles to the stress of erect posture is also shown in the gait of the old and feeble.

Next to the back, the abdominal group of muscles suffers most owing to the erect posture. Instead of even weight of abdominal and thoracic contents over the whole ventral surface of the trunk, greatest in the neighbourhood of the diaphragm as exists in the quadruped, the weight is in man very unevenly distributed.

Effects on Blood and Lymph Vascular System.

A greatly increased stress is put upon the whole vascular system by erect posture. The increased work thrown on the left ventricle and arterial system by the erect posture can be measured by obtaining the difference between the levels of the heart and the highest point of the body in the erect and all-fours positions, and subtracting the latter from the former. If the top of the head in the erect posture is 2 feet above the level of the heart, and the highest point of the body in the quadruped position is only half a foot above it, the 1½ feet of difference in a column of blood represents about 1/25 of an atmosphere, or about 30 mm. Hg. This is a considerable addition (20 per cent.) to the normal blood pressure (150 mm. Hg) in the left ventricle. A 20 per cent. increase of pressure beyond all other exigencies is serious, and the human organism is as yet only imperfectly adapted to it; but, in addition to this, the pressure in the arterioles is increased by gravity in proportion to their depth below the level of the heart, a depth which is quite different from many parts in the erect and quadruped positions, and it would appear that the vaso-motor centre is not yet perfectly adapted to the new demands put upon it on this account, especially in the old and feeble. Hypertrophy, no doubt, occurs where it is required, as in the arterioles of the legs and feet, the lumen being thereby somewhat encroached upon; this fact helps to explain the occurrence of dry senile gangrene in the lower extremities, for when fibrosis and degeneration of the hypertrophied coats occurs the lumen is still further decreased, and with a feeble circulation the crisis is brought about. The arterioles and veins of the portal circulation are, in the quadruped position, at practically the same level as the heart; when the erect posture is assumed they become from half a foot to 1½ feet below that level, and the pressure in them is consequently suddenly raised by from 15 to 35 mm. Hg, which fact explains the giddiness sometimes felt by people on rising from the recumbent or stooping to the erect posture after a full meal or when, owing to age or degeneration or illness, the activity of the vaso-motor system is below par. At the same time, the pressure in the cerebral arterioles is reduced by 40 to 50 mm. Hg, for the head, on rising from a stooping position, may be raised from half a foot or more below the level of the heart to 1½ feet or more above it. This fall of pressure in the arterioles is no doubt accentuated by the syphonic action of the correspondingly lowered venous and lymphatic pressure. The tendency to cerebral anæmia is only partly balanced by increased output of the left ventricle induced by hydrostatic rise in blood pressure. We can well understand why soldiers on parade, nurses on duty in the operating theatre, &c., sometimes faint—why, indeed, faintness is so common in man. The continuous erect position throws a continuous increased stress on the left ventricle and on the arterioles, veins, and capillaries of the portal system and lower limbs, and it is no wonder that one or both sometimes collapse under it. Stroke, or cerebral hæmorrhage, all too common in man, is, I believe, largely due to the extreme variations in pressure in the cerebral arteries and arterioles induced by the erect posture, coupled with the thinness of their walls.

On account of high capillary pressure there is in man a much greater tendency to œdema of dependent parts than in similarly constituted quadrupeds; this tendency applies especially to the portal area where there is a double circulation, where the integument is loose, and where there is less capillary support. In a quadruped the abdomen is rather above the level of the heart, owing to the fore limbs being shorter than the hind ones, and the flow in the inferior vena cava is naturally towards the heart.

Effects on the Veins.

These effects are well illustrated in the veins of all dependent parts being more or less chronically congested and frequently becoming varicose, causing capillary congestion, and often œdema, with loss of vitality and other complications in the area drained, such as excessive sweating, corns, &c. As a result of erect posture the whole human pelvis is in a state of chronic congestion almost from birth to death. In the male the congestion of the testes venously, lymphatically, and chordally, must have a detrimental effect and render them and the epididymi more liable to injury from microbic invasion. The same fact of congestion applies to the bladder and urethra and their appendages.

Women—probably because of the monthly toll upon the system exacted by menstruation, especially the excessive menstruation of the erect posture—are usually less robust than men, their blood often being thinner and containing a smaller percentage of hæmoglobin. Their muscles also are less firm, and their ligaments less tough; consequently, they feel the strain of the erect posture more, especially during pregnancy and after parturition. Hence arises the almost universal use of props to support their weakness—high-heeled boots to save their calf muscles, and high-legged ones to support the ankle-joints, corsets to support the

flaccid abdominal muscles and ligaments and the spine. The close-fitting character of these appliances helps also to support the blood-vessels, relieving the continued increased arterial spasm, and supporting the capillaries, lymph spaces, lymphatics, and veins against the increased internal pressure to which they are continually subjected, and prevent undue accumulation of blood in the large venous trunks. Unfortunately, the pressure is not always ideally adjusted for this purpose; interference with the free action of the diaphragm and unnecessarily high pressure in the upper part of the abdomen may increase instead of relieving the congestion.

Effects on the Viscera.

These effects have already been touched upon, but some points remain to be dealt with. The trachea, bronchi, and whole respiratory apparatus are placed at a great disadvantage by erect posture; their position becomes vertical instead of oblique or horizontal. It is consequently much more difficult to expel mucus and other secretion from the tubes; such secretion has to be done against gravity instead of with it. The extreme susceptibility of man to respiratory affections is no doubt largely due to this. The human cough is a much more prolonged and elaborate accomplishment than that found in most quadrupeds. Infectious conditions of the larynx are much more likely to infect the lungs in the erect posture, and once infected, the infection is more likely to gravitate towards the bases of the lungs as it does in basal pneumonia, pleurisy, &c., which are more common in the lower lobes.

So long as the tone of the skeletal muscles supporting the box of viscera is perfect, there is less likelihood of visceroptosis. The tendency of the thoracic contents to subside is prevented principally by the diaphragm with its strong central tendon and crura and its firm attachment to the ribs and costal cartilages, plus the support which it receives from the abdominal contents below. Visceroptosis is more marked in the abdomen. The stomach and colon—especially the transverse colon—the kidneys, suprarenals, and spleen are frequently displaced and may sink right into the pelvis.

Contrast the conditions in man with the corresponding condition in the quadruped. In the latter the lungs, instead of being as it were set up on end, with their whole weight supported on the small diaphragmatic surface—so that the lower lobes are constantly in a more or less compressed and sodden condition, and their apices almost strangled by the weight of the upper two ribs pressing upon them like a collar—recline upon the full extent of their ventro-lateral surfaces; the ribs, instead of pressing upon them, support them, and the heart, instead of having the hard central tendon and backbone to rest upon, reclines upon the ventral extremities of the lungs. The soft low-pressure auricles are in a position of freedom to expand and contract, the veins at the back of the thorax are not congested; the stomach, colon, &c., do not hang suspended by ligaments, but rest throughout their whole extent on the broad surface of the anterior abdominal wall. The kidneys also rest instead of being suspended, and the pelvis and its contents, being on a level with or usually above that of the abdominal contents, are not pressed upon by them, so that the pelvic floor has practically no stress to bear. The lower abdominal wall, internal abdominal rings, and crural canals have very little pressure to support, and there is no tendency to hernia as that is the highest part of the abdomen. The thighs are usually flexed on the abdomen, lending additional support.

Conclusion.

Considering the direct and indirect responsibility of erect posture for so much disease and suffering, I believe that the knowledge of that responsibility has not been sufficiently utilised for the cure of certain diseases. Among these may be mentioned most of the catarrhs and derangements of the respiratory and gastro-intestinal tract, comprising chronic nasal catarrh, acute and chronic middle-ear disease, disease of the antrum of Highmore and other accessory sinuses, bronchitis, bronchiectasis, phthisis, dyspepsia, gastritis, gastric ulcer, colitis, appendicitis, &c.; derangements of the genito-urinary tract, including dysmenorrhœa, metritis, prolapsed uterus or ovaries, ovarian congestion and pain, gonorrhœa and other catarrhs and congestive states of the genital tract; certain forms of albuminuria, renal prolapse and prolapse of other abdominal organs, including dilation and prolapse of the stomach, prolapse of the colon; various vascular diseases such as piles, varicose veins, heart affections, aneurysm, &c.; diseases and curvature of the spine, osteomalacea and tendency to contracted pelvis, coxa vara, hip-joint disease, knock-knees, bow-legs, &c. In elderly people there might be a risk of increased intracranial arterial pressure, but probably not much, and in young people none at all.

Some may argue that recumbency does all that the quadruped position could be hoped to do, but I think that is not so. In a short or acute illness recumbency is probably all that is needed in the way of posture, but in a long and chronic affliction the absence of exercise and general peripheral stimuli in the recumbent posture continued over a long period has a weakening and deteriorating effect on the constitution, whereas in such conditions as spinal curvature or Pott's disease, &c., the quadruped position would allow a considerable amount of healthful exercise and digestive and other glandular stimulation without aggravating the malady at all, and muscular tone, so desirable for the cure, would be maintained throughout. The same remarks apply equally to phthisis or chronic gastritis or colitis.

The erect posture should not be too early adopted in children, and after learning it they should be encouraged to revert to the all-fours position for a while each day. The oriental custom of sitting or reclining on the ground or on couches or mattresses, instead of sitting on chairs, has much to recommend it.

HOUSEHOLD AND SOCIAL SCIENCE DEPARTMENT OF THE UNIVERSITY OF LONDON.

THE report for 1920–21 of the Dean of the Household and Social Science Department of the University of London contains information of interest concerning the degree and diploma in Household and Social Science, for which courses are provided in the department of that name at the King's College for Women, Campden Hill, Kensington, W. 8. During the year covered by the report the University granted the degree retrospectively to those matriculated students who already held the University diploma. There has been increased evidence of the value of the degree; the entry for the year, whilst not so large as was anticipated, is the largest yet recorded. The last examination for the University diploma will be held in 1925, and no further students are to be admitted for this qualification. In order to meet a need for those students who do not matriculate, the College has arranged to hold examinations for a diploma, on the same course as that for the degree. Candidates are strongly advised to take matriculation and the entry for the College diploma is very small.

Health Visitors' Course.

After much consideration it was decided to drop some of the non-university courses and to concentrate more closely on the degree work. The high cost of the training and the uncertainty of the supply of candidates were the predisposing factors in deciding to terminate the course. Students already entered for the two years' course are completing their training, but no fresh students have been accepted for the coming session. During the past session arrangements were made for students to gain practical experience with the Westminster Health Society, the Marylebone Health Society, and the Myddleton-square Maternity Charity for child welfare work for English students, and with Guy's Hospital for international students. The London County Council undertook the arrangements for the work among children of school age, and tuberculosis work was directed by Dr. R. Govan, of the Hammersmith Dispensary, by permission of the medical officer of health and of the council of that borough.

RHYTHM IN WORK.

STUDENTS of human activity and fatigue will find much of interest in a report on Motion Study in Metal Polishing by E. Farmer and R. S. Brooke (Industrial Fatigue Research Board. Pp. 65. 1921. H.M. Stationery Office) which recounts a careful investigation carried out in the cutlery trade at Sheffield by Mr. Farmer. The comfort of the workers was increased by the provision for use when desired of specially designed stools and foot-rests, and also of screens with side curtains to prevent grit from the abrasive wheels from flying into the eyes. Attention was next turned to methods of work. Mr. Farmer shows how wasteful and inadequate is the traditional practice of leaving workers to pick up their own way of working, and how great increase in productive activity with less expenditure of energy may result from training in scientific methods of work. The details given are of great interest, especially to employers, while the ligh thrown upon certain principles of activity call for special note. Thus, the output of workers who, after training, were producing more with less fatigue became steadier throughout the day. In such workers no hurry or effort is to be observed, and they do not seem to be working hard, although their output far exceeds that of others who appear to be working at break-neck speed. Another point found was that as workers tire they tend to expend energy irregularly and extravagantly, owing, apparently, to disorganisation of their natural rhythm of movement. Hence in order to increase human efficiency in industry attention should be directed not only to eliminating unnecessary movements but also to maintaining rhythm. The means to be employed to this end are the interpolation of adequate and regulated rest pauses, instead of leaving workers to pause when and for as long as they fancy. The investigation reported is one of direct practical utility.

THE HOUSE OF H. K. LEWIS AND CO., LTD.

IN a notice in THE LANCET of Dec. 31st, 1921, of a brochure issued by Messrs. H. K. Lewis and Co., Ltd., detailing the growth and activities of their business for a period of 77 years, we alluded to their excellent medical library, and quite unwittingly omitted to mention—what all our readers know—that the firm also conducts a large and important medical publishing and bookselling business.

A ROYAL WET-NURSE.

A RECENT issue of the *Paris Médical* contains an account of the early nourishment of the little King of Rome in the beginning of the nineteenth century. The story is extracted by Dr. G. Schreiber from the writings of a colleague named Maigne entitled, "Du Choix d'une Nourrice," and published in 1836. His Majesty's nurse was selected from among 1200 candidates. The final selection was made by a committee of six court physicians and surgeons, and the choice fell upon a "superb woman of 23 years," whose milk was four and a half months old when she began to nurse the king, and it is recorded that it was very abundant. No restraint was put upon the royal appetite, and Napoleon François Charles Joseph took the breast on occasion as often as 15 times in a night. In those days it was usual to put a child to the breast as often as he or she was thirsty, and babies were fed as often as 40 times or more in the 24 hours. The young Napoleon was not weaned until the age of 14 months and 13 days, at which age he had 14 teeth.

PERSISTENT DIARRHŒA.

To the Editor of THE LANCET.

SIR,—I read with much interest the letter of a surgeon in your issue of Dec. 31st last regarding his case of persistent diarrhœa. The case is obviously a rare one, but the similarity which it bears to the case of my father is, I think, worthy of mention.

Diagram of findings on X ray examination, showing dilatation in two areas of descending colon.

My father practised as a surgeon in India for six years, during which period he suffered from recurrent attacks of dysentery. Returning to England, he remained in good health for about 30 years, and at the age of 60 began to have persistent and frequent diarrhœa with occasional attacks of incontinence of fæces. There was no hæmorrhage, mucus, or pain; the stools were very fœtid, but bacteriological and microscopic examinations did not reveal any marked abnormality. Diet and drugs prescribed by various consultants and others appeared to be of no avail. Rest in the recumbent position did not relieve the condition. There was gradual but definite loss of flesh. Nothing abnormal could be felt per abdomen or rectum. X ray examination after an opaque meal showed that the descending colon was dilated in two distinct areas separated by a constricted portion (as shown in the diagram). Unfortunately, before treatment for this condition could be rendered effectual, the patient died in his seventy-seventh year from uræmia. X ray examination should certainly be made in all such cases.

I am, Sir, yours faithfully,

Croydon, Jan. 3rd, 1922. H. A. ECCLES, M.D.

To the Editor of THE LANCET.

SIR,—I can tell your correspondent my experience of a similar case. The presence of albumin may be overlooked in patients suffering from chronic interstitial nephritis, or albumin and casts may be absent for years, while the blood pressure is not necessarily abnormally high. Under these circumstances there is often intractable diarrhœa which it may be inadvisable to attempt to arrest. Opiates are inadmissible. Mechanical remedies, such as two or three tablespoonsful of raw starch swallowed in a little milk without any other food sometimes give temporary relief but require frequent repetition. Precautions should be taken against worry, fatigue, over-eating, and exposure to cold.

I am, Sir, yours faithfully,

Bournemouth, Jan. 4th, 1922. G. H. RUTTER, M.B.

To the Editor of THE LANCET.

SIR,—I would suggest to your correspondent "Surgeon," Why not have a bacteriological examination of the fæces done, and try an autogenous vaccine? It sometimes works wonders.

I am, Sir, yours faithfully,

Jan. 5th, 1922. D. G. B.

IODINOSOL (E. T. PEARSON AND CO., LTD.).

IN THE LANCET of Jan. 7th, p. 23, we dealt with iodinosol 10 per cent. strength. Messrs. Pearson point out that this preparation is also put up in 6 per cent. strength, the greater demand of the medical profession so far being for the latter. The object in issuing two strengths is to provide in the 6 per cent. strength a means of administering iodine in protracted cases where it is desired to obtain the maximum percentage of therapeutic efficiency with the minimum of inconvenience. The 10 per cent. strength is used in those cases where it is desired to obtain, first of all, the maximum of local effect.

A HANDY URINOMETER.

THE ordinary form of urinometer is the simplest and commonest adjuvant to the unaided senses of the diagnostician. No special training of sight or hearing or touch or smell will enable him to estimate even roughly without it the density of any fluid with which he is dealing. The instrument has remained unaltered for generations, a sort of Johnnie Walker in clinical pathology. But its one drawback, and a very fatal one now that analysis tends more and more to be done on small specimens, is the amount of fluid required to float it. Dr. H. Wallace Jones, of Liverpool, writes to support the claims of an instrument, equally handy, but available for quite small quantities of fluid. "The urinometer, here illustrated," he writes, "consists of a glass cylinder into which the urine is drawn by means of a rubber bulb, 6 c.cm. of urine being sufficient to give a reading. The cylinder contains coloured specific gravity beads registering 1005, 1010, 1015, 1020, 1025, 1030, and 1035. I have found the urinometer of value in life-insurance work, acute nephritis, and in specimens obtained from ureteral catheterisation. The instrument, which has been made for me by Messrs. Hawksley and Sons, of Wigmore-street, London, W., can easily be adapted for cerebro-spinal fluid."

BARIUM SULPHATE FOR X RAY EXAMINATIONS.

A PURE preparation of this salt has been manufactured by the British Drug Houses, Ltd., Graham-street, City-road, for the purpose of X ray diagnosis. We need not point out how necessary it is that the sulphate of barium incorporated in X ray meals should contain no impurity, and especially no soluble salt of barium. Certain soluble salts of barium, owing to mistakes made by pharmacists, have been administered before now with disastrous results in the giving of test-meals. We reported one such case in full some two years ago, and at a meeting of the Société Médicale des Hôpitaux of Paris two similar cases were recorded. In one case death had occurred from the administration of barium sulphide, and in another barium carbonate was the poison accidentally given. In view of such occurrences—and not long ago we recorded a similar one from a hospital in Australia—we can endorse the recommendation of British Drug Houses, Ltd., that every care should be taken to secure specially pure barium sulphate for admixture with test-meals.

"ONE SMALL-POX AT LONG REACH HOSPITAL."

THIS announcement appears on the daily return of patients at the M.A.B. Fever Hospitals issued on Sunday, Jan. 8th, and we presume that it refers to the case of Mr. James O'Grady, M.P. for Leeds (South-Eastern Division), who has recently returned from Russia, where he made a valuable investigation into the extent of the famine. Kansas City has at the present time an epidemic of small-pox that is killing 34·4 per cent. of those attacked. A mail clerk on the Kansas and Chicago Railroad contracted small-pox a few weeks ago, returned to his home in Chicago, and died a few days later; he had never been vaccinated. His wife is now in the Kansas Isolation Hospital with small-pox; she had never been vaccinated. A lady, 18 years of age, who left Kansas City to visit friends at La Grange, Illinois, took small-pox with her and died a few days later; she had never been vaccinated. We do not know whether Mr. O'Grady was revaccinated before he undertook his journey to Russia, where it is well known that small-pox is widely prevalent. He had probably been vaccinated at some time, or his attack of small-pox would have been more severe. We are glad to learn that he is convalescing, but that fact may not prevent others with whom he came in contact after his return from Russia from contracting small-pox in fatal form. The obvious and simple precaution of revaccination before entering a district or country where small-pox is prevalent might have occurred to one of our legislators and have been a useful ensample to others.